
*"The most powerful form of activism is
just the way you live": grassroots
intentional communities and the
sustainability of everyday practice*

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Abstract

Changing household consumption patterns may be the fastest pathway for reducing the currently unsustainable levels of resource consumption in the developed world. Between 50% and 80% of global land, water and material consumption and greenhouse gas emissions can ultimately be traced to household consumption, contributing substantially to environmental degradation. Changing household consumption practices therefore presents an opportunity to significantly reduce this negative environmental impact. This thesis has explored 'intentionally sustainable communities', such as ecovillages and cohousing communities, as sites where significant changes to household consumption are occurring. These communities are niche sites of grassroots innovation; crucibles in which new arrangements of potentially innovative and sustainable household practices are formed that may (or may not) be usefully transferred to mainstream households.

This research examines the extent to which these intentionally sustainable communities have reduced their environmental impacts. It then explores the environmentally beneficial household consumption practices that have been established and sustained, the role of the intentionally sustainable community in enabling members to change their practices, and the potential for these communities to have wider influence.

A mixed method approach was adopted, first undertaking a systematic literature review of ecological and carbon footprint studies of intentional communities globally. Second, two Australian case study communities; a rural land sharing cooperative (Bundagen), and an urban cohousing community (Murundaka), explored the practices and elements of practice that residents perceived as significant for their everyday sustainability. Finally, the potential for Murundaka to influence household consumption practices on a wider scale was considered.

The systematic review found strong but limited evidence that many intentional communities are achieving substantial reductions in environmental footprints. Empirical insights from the case studies revealed that a broad range of community-led interventions across many domains of practice were improving household sustainability in the communities. Key elements discussed include explicit and shared meanings from creating a community vision, the impacts of shared spaces, infrastructures and resources, and the role of community dynamics in circulating competences through effective social learning. The research highlights the key role played by non-mainstream practices such as the intentional, resident-driven creation of community and community-scale governance. These practices enable community members to act as both policy makers and practitioners, with greater scope and reflexivity to intervene in the systems of practice which shape their daily lives. Finally, pathways through which intentionally sustainable communities may be able to influence the practices of wider society were discussed, through an exploration of the influence of Murundaka on its broader community.

CERTIFICATE OF ORIGINAL AUTHORSHIP

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as part of the collaborative doctoral degree and/or fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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List of Publications by Author

Journal Articles

Daly, M. 2017, 'Quantifying the environmental impact of ecovillages and cohousing communities: A systematic literature review', *Local Environment: The International Journal of Justice and Sustainability*, vol. 22, no. 11, pp. 1358–77.

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Royston, S., Daly, M. & Foulds, C., 2014. Know-how, practices and sustainability. In C. Foulds & C. L. Jensen, eds. *Practices, the Built Environment and Sustainability - A Thinking Note Collection*. Cambridge, Copenhagen, London: GSI, DIST, BSA, CCSG, pp. 7–9.

Macrorie, R., Daly, M. & Spurling, N., 2014. Can “systems of practice” help to analyse wide-scale socio-technical change? In C. Foulds & C. L. Jensen, eds. *Practices, the Built Environment and Sustainability - A Thinking Note Collection*. Cambridge, Copenhagen, London: GSI, DIST, BSA, CCSG.

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Conference presentations – peer-reviewed abstract

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Daly, M. 2016, 'Sustainable intentional communities: Niche sites transforming everyday household consumption practices', *7th International Sustainability Transitions Conference 2016*, 6th-9th September 2016, Wuppertal, Germany.

Daly, M. 2013, 'Ecological Footprinting in Intentional Communities', *Australian Intentional Communities Conference 2013*, 6-8 December 2013, Moora Moora Cooperative Community, Victoria, Australia.

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Daly, M. 2015, 'Ecovillages and cohousing as grassroots innovations: Exploring the sustainability of everyday consumption practices within the Australian niche', *GEN+20 Summit: Living the New Story*, 6th - 9th July 2015, Findhorn Community, Scotland.

Chapter 1. Introduction

1.1 The Anthropocene – The Global Context

'Welcome to the Anthropocene', provocatively declared the film that opened the Rio+20 summit on Sustainable Development (Planet Under Pressure 2012, 02:48). Such significant changes have occurred since the 1950s that humanity is now a planetary-scale force; our activities dominate the living fabric of ecosystems and the Earth System¹ processes that provide the critical support system for life (Stafford Smith & Brito 2012; Steffen, Crutzen & McNeill 2007). This short film charted the development of humanity over the last 250 years, from the start of the industrial revolution to the Rio+20 summit, as it became a global force of a scale equivalent to major geological processes. The last 50 years, in particular, have seen 'the most rapid transformation of the human relationship with the natural world in the history of humankind' (Steffen et al. 2004, p.131). There is growing consensus that Earth has entered a new geological epoch, the Anthropocene, in which human activities are the dominant driver of change in the Earth System (Steffen, Broadgate, et al. 2015).

The process of entering that Anthropocene era, however, has not been benign. Planetary boundaries research has studied the 'safe operating space' of the Earth System for human society, to determine the level of human impact across a wide range of system processes. We are transgressing the boundaries of two of the nine processes² identified as critical for maintaining Earth System stability (biosphere integrity and bio-geochemical flows), and are likely to be exceeding the boundaries of another two: climate change and land-system change (Steffen, Richardson, et al. 2015).

One way of understanding the global impact of humanity is to identify the ecological footprint (EF) (Rees & Wackernagel 1994). This measures the amount of biologically productive land and water an individual, activity or population needs to produce all the resources it consumes and absorb all the waste it generates using current technologies and resource management practices (WWF 2014). This methodology compares the demands placed on the biosphere by humanity's consumption with the regenerative capacity of the earth, termed biocapacity (WWF 2014). Biocapacity is the area of land and productive oceans available to produce renewable resources and absorb CO₂ emissions.

The most recent global EF data (Global Footprint Network 2017b), shown in Figure 1-1, reveals that the total human footprint has exceeded the Earth's biocapacity since 1970, and the extent of this

¹ The term Earth System refers to the suite of interacting physical, chemical and biological global-scale cycles and energy fluxes that provide the life-support system for life at the surface of the planet (Steffen et al. 2004).

² The nine planetary boundaries identified by researchers are: Climate Change, Ocean acidification, Stratospheric ozone depletion, Atmospheric aerosol loading, Biogeochemical flows, Global freshwater use, Land-system change, Changes in biosphere integrity, and Chemical pollution (Steffen, Richardson, et al. 2015).

'ecological overshoot' has been generally increasing since at least the 1960s. The rate of increase accelerated in the early 21st century, before slowing around the time of the global financial crisis.

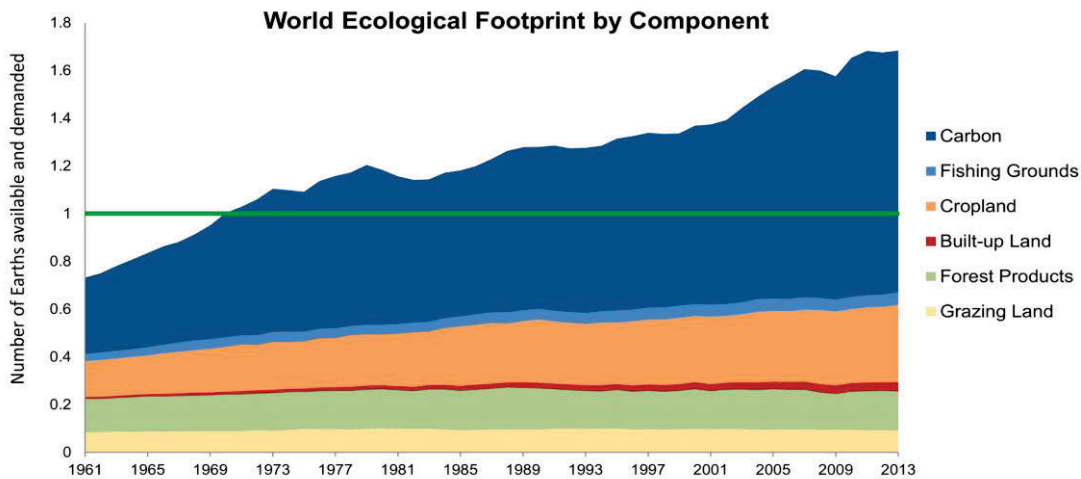


Figure 1-1 - Global Ecological Footprint by component (Global Footprint Network 2017b)³

The reporting shows that in 2013, the last date for which full data is available, the total human footprint exceeded what is sustainable for the Earth System by 68% (Global Footprint Network 2017b). This means it would take 1.68 years for the Earth to fully regenerate the renewable resources that people used in one year. The data highlights the most significant contributors to the EF, in particular demonstrating the scale of the impact of anthropogenic emissions of carbon dioxide, and the rate at which they are growing. Almost three-quarters of the increase in world EF since 1961 is due to the increased area required to sequester anthropogenic carbon emissions. The world has been experiencing exponential growth in a number of key areas, such as population and industrial production, for many years (Meadows, Randers & Meadows 2004). The pressure of further exponential growth could be disastrous, destabilising 'critical biophysical systems and triggering abrupt or irreversible environmental changes that would be deleterious or even catastrophic for human well-being' (Rockström et al. 2009, p. 2).

The research measuring planetary boundaries, global EFs and biocapacity of the Earth provides comprehensive, high-level indicators of the unprecedented stresses being placed on critical

³ Carbon – the area of forest land required to sequester anthropogenic carbon dioxide emissions.

Fishing grounds – the demands of fisheries on aquatic ecosystems as the equivalent surface area required to sustainably support a country's catch.

Croplands – the amount of land necessary to grow all crops consumed by humans and livestock.

Built-up Land – bioproductive land that has been physically occupied by human activities.

Forest Products – human demand for the products of the world's forests, essential wood for fuel and wood for timber and pulp.

Grazing lands – demand for grazing land to feed livestock and the embodied demand for grazing land in traded goods (Global Footprint Network 2017b).

biophysical systems (Global Footprint Network 2017b; Steffen et al. 2004; Steffen, Richardson, et al. 2015; WWF 2014). These trends will shape the trajectory of global civilisation in the 21st Century. Humanity currently finds itself faced with the:

imminent end of the era of cheap oil, the prospect... of steadily rising commodity prices, the degradation of forests, lakes and soils, conflicts over land use, water quality, fishing rights and the momentous challenge of stabilising concentrations of carbon in the global atmosphere (Jackson 2009, p.7).

The United Nations (UN) Sustainable Development Goals (SDGs) were developed with global input, and adopted as the global development agenda post-2015. They represent a recognition at the highest levels of international governance of the immense environmental and societal challenges faced by humanity for the preservation of the planet:

Natural resource depletion and adverse impacts of environmental degradation, including desertification, drought, land degradation, freshwater scarcity and loss of biodiversity, add to and exacerbate the list of challenges which humanity faces. Climate change is one of the greatest challenges of our time and its adverse impacts undermine the ability of all countries to achieve sustainable development. Increases in global temperature, sea level rise, ocean acidification and other climate change impacts are seriously affecting coastal areas and low-lying coastal countries, including many least developed countries and small island developing States. The survival of many societies, and of the biological support systems of the planet, is at risk. (United Nations 2015, para.14)

1.1.1 Linking consumption and environmental degradation

The environmental impacts of final, or household, consumption have been recognised in environmental discourse since the 1970s (Tukker et al. 2010). It was at this time, for example, that Ehrlich and Holdren proposed the I=PAT⁴ formula for measuring environmental impact (1971). This formula is commonly used as a conceptual tool to represent the factors influencing environmental impacts. It draws attention to the role of consumption (affluence) as a key driver of environmental change. However, for a long time the focus of environmental discourse remained on the familiar themes of 'population (too large), technology (not green enough), and economic growth (not enough of it in the right places)...' (Princen et al. 2002, p. 2). However, there is now a much wider understanding that consumption rates of crucial global resources (for example, water, forestry products and fish) have been rapidly increasing independently of population growth (European Commission 2015; Princen, Maniates & Conca 2002; WWF 2012). This indicates that increased consumption doesn't just correlate directly to population growth. Rather, the spread of 'the

⁴ where I = environmental impact, P = population, A = affluence interpreted as consumption per person, and T = technology

consumption-based Western way of life' (Steffen et al. 2004, p.38) means that consumption rates, and populations are increasing, compounding the global impact.

The fundamental link between consumption and environmental impact has been the subject of increasing interest in both policy and academic circles (Cohen, Szejnwald Brown & Vergragt 2013; Conca 2001; Hamilton 2002; Princen, Maniates & Conca 2002; Schor 1999; Seyfang 2009). Sustainable consumption and production is now recognised as a key research and policy agenda (Geels et al. 2015a). It is within this context that the UN SDGs commit to making 'fundamental changes in the way that our societies produce and consume goods and services', calling on 'Governments, international organizations, the business sector and other non-State actors and individuals' to work to change unsustainable consumption patterns (United Nations 2015, para. 28).

It is clear that our current level of environmental impact is unsustainable, and it is vitally important that changes occur to reduce this impact. The Intergovernmental Panel on Climate Change (IPCC) concluded that 'limiting climate change will require substantial and sustained reductions of greenhouse gas emissions' (2013, p.19).

1.2 Sustainable consumption and social justice

The need for society to fundamentally change how it consumes goods and services provides the overarching context for this research project (United Nations 2015). The Paris Agreement – the agreement within the United Nations Framework Convention on Climate Change (UNFCCC) dealing with greenhouse gas (GHG) emissions mitigation, adaptation and finance starting in the year 2020⁵ – reinforced the importance of sustainable lifestyles and sustainable patterns of consumption, in the global climate change and sustainability discourse (UNFCCC 2015). It also highlighted the leading role developed nations must play to change patterns of consumption and production, guided by the 'principle of equity and common but differentiated responsibilities and respective capacities' (UNFCCC 2015). This principle recognises that the most developed countries bear a greater responsibility for historical and ongoing contribution to global emissions, and possess a greater capacity to respond to the challenges. The excessive consumption of the wealthiest populations is the greatest contributor to planetary boundary stresses, with 11 per cent of the global population responsible for roughly 50 per cent of global carbon emissions, and 16 per cent of the world's population (those in high income countries) accounting for 64 per cent of global spending on consumer products (Raworth 2012). According to the EF measure, if the whole world was to emulate the consumption levels of some of the most affluent countries such as Australia or the USA, then roughly four planets would be required (WWF 2014). The importance of changing consumption patterns in the developed world is abundantly clear when we consider that whilst the global

⁵ This agreement came into force in November 2016

population is expected to grow by ~1.3 billion people over the next 20 years, the global 'middle class' of consumers seeking to emulate the high consumption lifestyles of the developed world is expected to grow from less than 2 billion to almost 5 billion by 2030 (Kharas, 2010 cited by Raworth, 2012). Yet the dominant storyline 'sold' to the less-developed world links images of the 'good life' with continued growth in personal consumption to unsustainable levels (Sahakian & Wilhite 2013).

A key challenge is establishing consumption patterns that satisfy both environmental limits and well-being and social justice concerns. Concerns about consumption reach far beyond narrowly biophysical considerations of environmental degradation, they 'embrace issues of community, work, meaning, freedom, and the overall quality of life' (Princen et al., 2002, p.3). Given the fundamental link between consumption and well-being, and societal ideas of prosperity and progress, any exploration of consumption must be cognisant that any modification or reduction of consumption levels must still be compatible with living a 'decent life' (Druckman & Jackson 2010). Consumption both provides physical needs and fulfils crucial social and cultural functions. First and foremost, it provides people with the opportunity for many of the basic necessities of life, from food, shelter, water, clothing, sanitation and medical care, to schooling and information, and mobility through transport and energy to enable these necessities (UNEP 2006). Consumption, through the exchange of goods and gifts, and standards of dress, food, housing, transport and communication, is also part of a social language, through which relationships are established, and full participation within a particular culture and society is established and enabled (UNEP 2006).

Raworth (2012) synthesised a framework that brings together the social justice imperative to provide for the basic needs of all humanity, with the concept of planetary boundaries (Rockström et al. 2009). This framework, illustrated with a donut shape in Figure 1-2, represents an environmentally safe and socially just space for humanity, with a social foundation and an environmental ceiling.

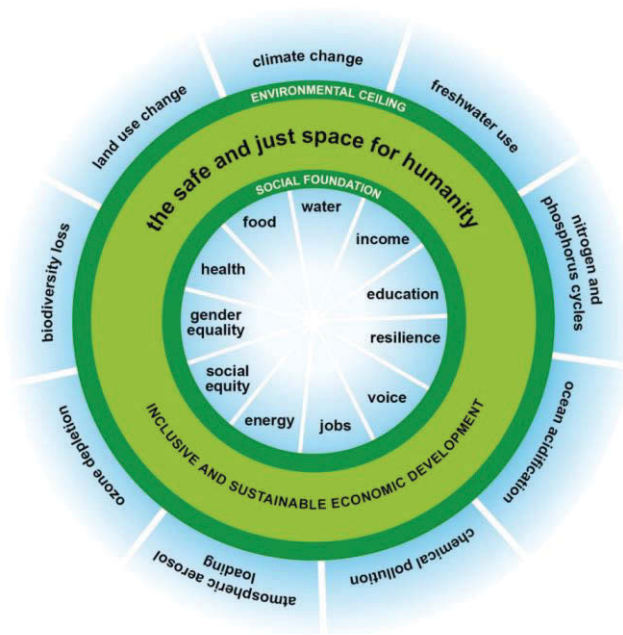


Figure 1-2: A safe and just space for humanity to thrive in (Raworth 2012)

Increasing consumption levels in less-developed nations may be desirable, inasmuch as it improves access to the basic necessities of life (Raworth 2012). Although a simple focus on the 'growth consensus' – the idea that increasing economic growth in less-developed nations is the most effective means of improving well-being – has been questioned. Brady et al (2007) found that other factors such as fertility rates, urbanisation and education have far more powerful effects on well-being than economic growth.

Given the environmental and social justice considerations, there is a moral argument for developed countries to reduce consumption levels so as to create 'space' for developing nations to increase the prosperity and affluence of their populations. There is also a compelling argument that the developed world has already passed the point where increased consumption improves well-being (Inglehart et al. 2008). In fact, increasing growth in consumption levels in already affluent countries may actually be having detrimental, even 'pathological', effects on both societal well-being and the environment (Helliwell & Putnam 2004; Jackson 2008).

1.3 Rationale for research

A radical change in consumption patterns will be needed to move toward sustainable prosperity (Jackson 2009). Many have asked how this change can be achieved, often framing the question in the following way:

How best can we shift to a culture of permanence, both for ourselves and for the biosphere that sustains us? (Wilson 2002).

Yet, whilst this need for change is clear and widely accepted, the response from global and national leadership has been insufficient (Meadows, Randers & Meadows 2004; UNEP 2016). Scholars reflecting on 'four decades of modern environmentalism, succeeded by the concept of sustainable development' ask 'why has there been so little progress towards a sustainable and desirable human civilisation?' (Riedy 2005). International agreements and initiatives such as the SDGs and the Paris Agreement (UNFCCC 2015; United Nations 2015) are important for implementing the required changes, yet there is growing recognition that traditional top-down approaches to driving sustainability transitions are insufficient given the complexity and magnitude of these changes. In Australia, this recognition is often coupled with scepticism of the Government's understanding and/or commitment to the problem. Recent characterisations of the Australian Federal Government as out-of-touch, as the 'Poor old feds... still listening to the scraggly bunch of deniers lying around at the wrong end of the bell curve' (The Fifth Estate 2017) are not unusual. Whilst understanding that international and national action is crucial, there has been a growing recognition that civil society has already been playing a significant role in filling the action vacuum (Kent 2012), and that it will continue to be crucial in reshaping 'unsustainable social, ecological, economic, and cultural practices and patterns' (Frantzeskaki, Dumitru, Anguelovski, et al. 2016, p.42).

Definitions of civil society vary, from any institution that is not the state and the market, to more specifically encompassing non-state institutions ranging from 'grassroots and community-based organizations, advocacy groups (e.g. NGOs), coalitions, professional associations and other organizational forms' that are not motivated by gaining political or economic benefit (Frantzeskaki, Dumitru, Anguelovski, et al. 2016, p.42).

There is a developing research agenda around community-led solutions for sustainability, which is discussed in greater depth in Chapter 2. This agenda calls for research that investigates grassroots and community-based organisations as sites of innovation for sustainable development, and seeks to not only learn from the diversity of innovations, sustainable practices and alternative means of provision, but also to guide this social learning into the mainstream (Seyfang & Smith 2007, p.599). Grassroots movements and initiatives vary widely in scope and purpose, ranging from Climate action networks, community energy, food cooperatives, and Transition Towns, to furniture-recycling schemes, cohousing, local food projects, and complementary currencies (Kent 2012; Seyfang & Haxeltine 2012; Seyfang & Smith 2007).

As will be discussed in the following chapter, the household is a site in which many practices linked to environmental impacts take place. Household consumption is a major contributor to many forms of environmental degradation, for example, GHG emissions (Hertwich & Peters 2009). The OECD has stated that 'changing unsustainable household consumption patterns is crucial for achieving the goal of sustainable development in OECD countries' (OECD 2002, p.1). Newton (2011) describes

changing household consumption patterns as being the fastest transition pathway for high income countries to lower their currently unsustainable levels of resource consumption⁶. In addition, the UN has highlighted the importance of cities, and the growing urbanisation of the global population in the SDGs. Goal 11 aims to make cities inclusive, safe, resilient and sustainable, adding that the world's cities occupy just 3 per cent of the Earth's land, but account for 60-80 per cent of energy consumption and 75 per cent of carbon emissions. Therefore, grassroots innovations that seek alternatives to the existing consumption practices of the household and neighbourhood present fertile grounds for research, particularly given the trends of urbanisation.

The term 'intentionally sustainable community' encompasses those initiatives within the intentional communities movement with strong environmental values. Ecovillages and cohousing communities are the community types most commonly associated with this term (Beck & Ormsby 2016). Intentional communities have a rich history, forming in response to pressures on the religious, economic, and/or social structures of society (Kanter 1972). The growth of eco-communities has occurred more recently; a response to the growing awareness of the environmental damage inflicted by modern society. The term 'ecovillage' was first used in 1985, and the Global Ecovillage Network (GEN) now lists over 1000 local ecovillage projects and networks worldwide (Kunze & Avelino 2015).

A growing network of intentionally sustainable communities around the world are adopting explicit pro-sustainability goals, including striving for sustainable consumption patterns. Some are achieving eye-catching results, e.g. '*Ecovillages record lowest ever ecological footprint results*' (Dawson 2007). It follows that intentional communities are important sites of innovation in everyday consumption practices. Focusing on these practices in relation to households and local neighbourhoods represents a promising research path.

1.3.1 A pragmatic approach

A pragmatic epistemological stance has been adopted to follow this research path. Pragmatism places the research focus on finding solutions to problems, in this case, unsustainable consumption patterns (Creswell 2003). Environmental pragmatism, which best encapsulates the particular form adopted (see Dunlap (2010)) is open to any research approach that can provide insights regarding this problem; this includes empirical investigations that examine the complex interrelations between social phenomena and environmental conditions, e.g. issues of unsustainable

⁶ Compared with technological innovation for eco-efficient production and urban infrastructure systems (green economy) (slow change rate) and Innovative urban planning and design for eco-city (sustainable built environment) (moderate change rate).

consumption patterns. The understandings of this epistemology will be discussed further in Chapter 4.

1.3.2 A social practice theoretical framework

The environmental movement has a long history of trying to reduce detrimental environmental impacts by changing behaviours, generally by targeting individuals. Behavioural change theories have been characterised by a focus on ABC – Attitude, Behaviour and Choice – placing the burden of responsibility for responding to environmental issues, such as climate change, on individuals (Shove 2010). This approach has attracted increasing criticism as being over-individualistic, and not sufficiently cognisant of factors such as social relations, material infrastructure and context as intrinsic to social practices (Hargreaves 2011). Social Practice Theory (SPT) has emerged, and been positioned, to address the shortcomings of 'ABC' theories (Shove 2010). SPT is a theoretical concept compatible with the pragmatic epistemological framework. The relevance of this theoretical perspective to sustainable consumption and this research will be briefly outlined below, and discussed in depth in Chapter 3.

As this theoretical perspective raises different questions about how to create more sustainable patterns of consumption and attempts to address issues with previous theories based on 'ABC' principles, it is appropriate to use practice theory in the context of community-based grassroots initiatives (Middlemiss 2011). An exploration of the sustainable practices occurring within the grassroots niche of sustainable housing communities has the potential to discover information about 'new' or non-mainstream practices that, Spaargaren (2011) states, could be of strategic interest for policy makers.

SPT shifts the focus from individuals' attitudes, behaviours and choices, to how practices form, how they are reproduced, maintained, stabilised, challenged and ultimately killed-off; on how practices recruit practitioners to maintain and strengthen them through continued performance, and on how such practitioners may be encouraged to defect to more sustainable practices (Hargreaves 2011).

The goal of changing consumption patterns requires an understanding of how practices may be governed to become more sustainable. Theorists have explored pathways for policy makers to intervene in practices (Spurling et al. 2013; Spurling & McMeekin 2015). However, in everyday life, the distinction between practitioners and policy makers is not clean, as people in policy making roles are practitioners of the practices they are trying to influence, and householders have some role as policymakers of their everyday lives. This is made very explicit by the community governance arrangements of intentional communities, and this presents a rich terrain for exploring sustainable interventions in everyday practice. How does recruitment to environmentally beneficial practices occur, and likewise how does defection from environmentally detrimental practices comes about?

How can existing practices become more sustainable, and how does an exploration of the interlinking of everyday practice into wider systems contribute to this understanding?

Lastly, grassroots niches such as intentionally sustainable communities have been conceptualised as having the potential to seed systemic change (Geels 2011). This raises the question of what is being done to encourage defection from unsustainable practices and recruitment to sustainable ones on a wider scale, and what more could be done?

1.4 Research Agenda

1.4.1 Research Aim

The overall focus of this research is on intentional sustainable communities – communities whose members aspire to live in a more environmentally sustainable manner than mainstream society. These are grassroots responses to issues of unsustainability that focus on action at the level of household and neighbourhood practices. As one of my research participants put it, ‘the most powerful form of activism is just the way you live...’ (Sandy, resident of Bundagen Cooperative Community for ~5 years). This research explores the environmentally beneficial household consumption practices that have been established and have persisted in intentionally sustainable communities⁷. It seeks to understand if intentionally sustainable communities are an effective response to environmental issues, how sustainable consumption is enacted in these communities, and how they can contribute to the adoption of more sustainable consumption patterns on a wider scale.

1.4.2 Research Objectives

Key literature regarding sustainable consumption, grassroots innovations and intentionally sustainable communities such as ecovillages and cohousing communities are reviewed in Chapter 2. Gaps in the current research and key research objectives were identified from this review and are described in Section 2.6. The objectives identified are as follows:

- An improved evaluation of the measured environmental performance of these communities.
- Expanded knowledge of grassroots innovations by considering new types of initiatives (intentionally sustainable communities) in new geographic contexts (Australia).
- Exploration of environmental sustainability innovations within the Australian intentional community context.

⁷ This research considers the household as a meso-scale unit of analysis that can vary in size, but is of a scale that is larger than the individual but not of the scale of a large neighbourhood. The sharing of resources and spaces in intentionally sustainable communities can blur the lines between strictly defined individual households.

- An application of social practice theory to look at the varied innovations in everyday consumption that develop within the intentionally sustainable communities niche.
- Improved understanding of how an intentionally sustainable community could influence the sustainability of mainstream populations.

1.4.3 Research Questions

Given these research objectives and the pragmatic research approach described, four specific questions were established to guide the research. The manner in which these questions are addressed in the thesis is illustrated in Figure 1-3. The research questions are:

1. To what extent do intentionally sustainable communities (ecovillages and cohousing communities) have a lower environmental impact than other communities? (RQ₁)
2. What practices are Australian intentionally sustainable communities performing in order to reduce environmental impacts or improve the sustainability of the household? How do these practices differ from those of mainstream communities? What are the elements that contribute to the sustainability of these practices? (RQ₂)
3. Why do the practices and elements of Australian intentionally sustainable communities differ from mainstream communities? What is the role of the intentional community in changing the practices of community members through interventions in:
 - a. elements of practice,
 - b. relations and interlinking between practices, and
 - c. the recruitment of carriers to more sustainable, or innovative practices (RQ₃)
4. How are intentionally sustainable communities influencing sustainable consumption practices on a wider scale? (RQ₄).

1.5 Thesis outline

A diagrammatic outline of the thesis chapters, identifying the research questions addressed in each chapter is provided in Figure 1-3. The manner in which this thesis is structured is summarised below.

1.5.1 Literature Review and theoretical framework (Chapter 2-3)

The next chapter reviews the literature describing the significance of unsustainable levels of household consumption on the global environment and identifies the priority areas of most environmental significance. It explores the literature on sustainable consumption; how has that been conceived and what would sustainable consumption look like? There is a growing understanding that radical changes are required to both existing consumption patterns and the social-technical systems that support those patterns to achieve a sustainable and equitable future. The chapter then focuses on the important role that community-led, grassroots initiatives can play in achieving the required socio-technical transition. The intentional communities movement, particularly ecovillages and cohousing communities, is then explored in much greater depth as a

grassroots movement where participants actively pursue radically different lifestyles with reduced consumption patterns.

Chapter 3 introduces social practice theory as the theoretical framework that guides this research project. By shifting the focus of analysis from the individual to that of everyday practice, and the elements of these practices, it decentres the individual and brings into relief the contextual factors from the wider socio-technical system that are so crucial in determining the adoption of sustainable patterns of consumption. In this way, it represents a highly appropriate framework for gaining a greater understanding of everyday consumption practices. This chapter explores the key concepts of elements of practice (materials, competences and meanings) as well as how changes in practices occur, and could potentially be governed by interventions that focus on elements, practices or systems of practice.

1.5.2 Research Design (Chapter 4)

This chapter describes and justifies the research process used to answer the research questions guiding this doctorate. The research design first involved a systematic review of studies of intentional communities' ecological and carbon footprints. Following that review, the research focused on two detailed case studies of Australian intentional communities – Bundagen Cooperative Community and Murundaka Cohousing Community. This chapter describes the process used to select and access these communities as case studies of intentionally sustainable communities and gives a background description of each community. The case study methodology employed is explained, as is the use of group and individual interviews and participant observation as the primary data gathering methods. The analysis of the case study data, using themes guided by the social practice theory framework, is discussed. The potential limitations of the research design employed are also outlined.

1.5.3 Case study results and analysis (Chapters 5-7)

Chapter 5 presents the results from a systematic review of the evidence that intentional communities with a focus on ecological sustainability were successful in reducing their environmental impact – using environmental and carbon footprint metrics. The number of communities that have investigated and published data on their footprints was larger than expected from previous reviews. Although that number remains small, many were achieving significant reductions in measured environmental impact. They present interesting cases for further detailed exploration of their everyday practices.

Chapters 6 and 7 present the results of the two case studies of Australian intentional sustainable communities – Bundagen Cooperative Community and Murundaka Cohousing Community. The focus is on the practices that community members identified as helping them live in a more

environmentally sustainable manner, and the ways that their communities influenced these practices. Chapters 6 and 7 draw on social practice theory to describe these practices, identify some of the key impacts on sustainability deriving from these forms of practice, and identify the different elements that are important in changing these practices within the intentional communities. The chapters are structured around significant domains of practice: the creation of home and community; the governance of home and community; dwelling the home; food provisioning and consumption; and mobility and transportation.

1.5.4 Discussion (Chapter 8-9)

Chapter 8 explores in further detail the practices within the case study communities. It draws on concepts of systems of practice and forms of intervention in practice to consider the community members as both practitioners and policy makers of their everyday life. Given this conception, it examines the role of the communities in shaping these sustainable practices and shifting / encouraging sustainable consumption practices in the household.

Chapter 9 presents an exploration of the possibilities of these communities influencing everyday practices on a scale wider than simply the residents and members of their communities. This topic is considered in two ways: what are the ways that practices and elements can spread and grow from these communities; and what can be learnt from the experience of this niche for the governance and intervention in practice on a wider scale.

1.5.5 Conclusion (Chapter 10)

The thesis concludes by summarising the answers to the research questions and objectives that have been discussed throughout, the implications of the research and presenting a series of suggestions for further research.

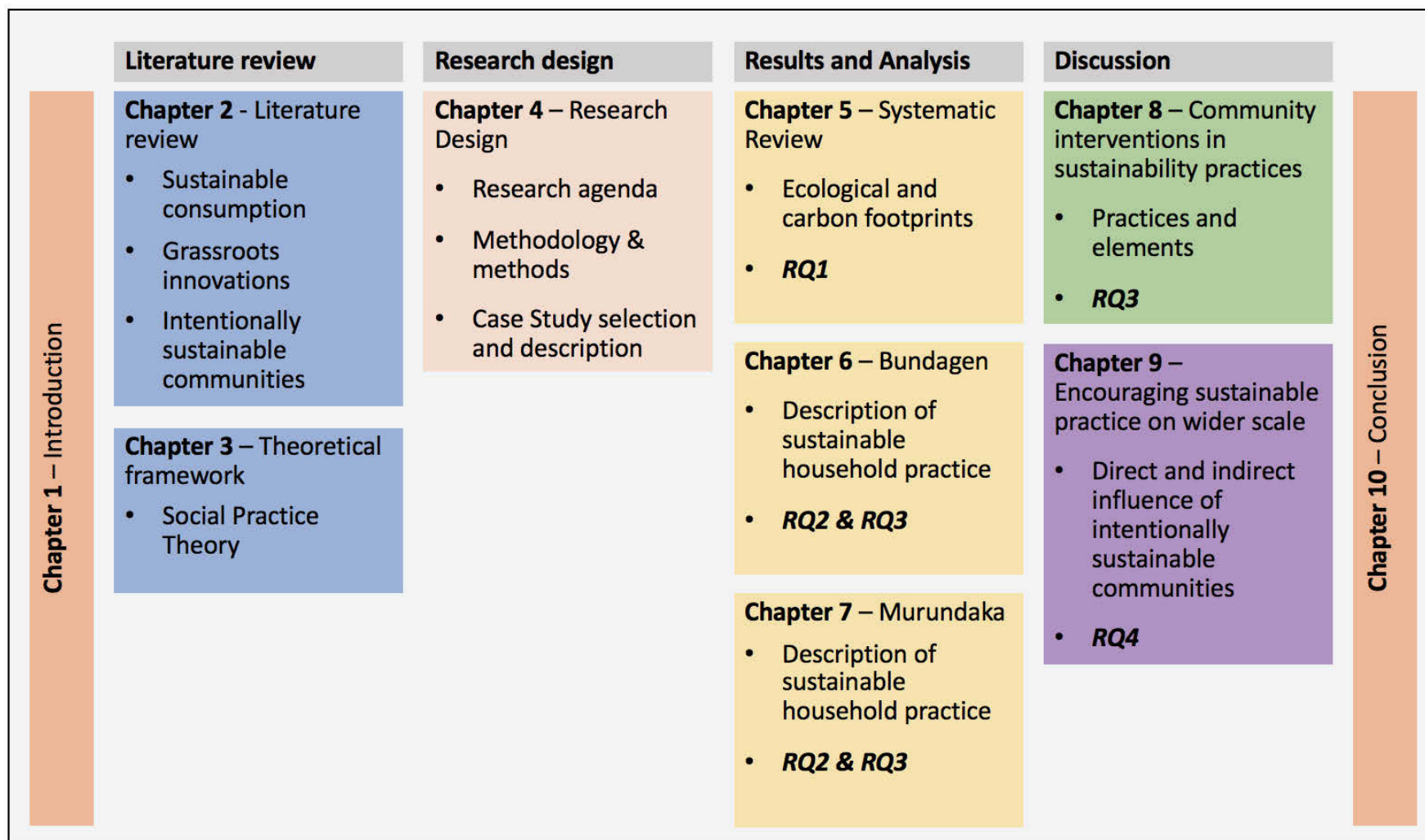


Figure 1-3: Schematic outline of thesis structure

1.5.6 Coda – personal reflection on reasons to focus on intentionally sustainable communities

There are many compelling reasons that this doctoral research project focused on intentionally sustainable communities. From an academic perspective, intentionally sustainable communities represent rich terrain for exploring innovations in sustainable consumption. This is discussed in greater detail in the following chapter. To briefly summarise, they show promise in achieving real reductions in environmental impact, and potential for acting as seeds for change on a wider scale. The movement has a strong tradition in Australia, although research focusing on environmental impacts of Australian communities is not comprehensive. There is a significant research contribution to be made by considering how members of Australian intentional communities enact everyday sustainability.

There are also a couple of personal reasons that have drawn me to this area and influenced this choice of topic. Firstly, my childhood home was built from mudbricks⁸ by my parents and their wider circle of friends and acquaintances, who also built mudbrick homes. This began as quite a formal group, called Earthworks, though over the years it became much less of an organisation and more of a natural community. Whilst this was not an intentional community in the sense of group of people living together, it was a strong social community, formed around a shared interest in alternative, natural and largely self-built house construction. Many members of this community had visited intentional communities, and talked about the idea of creating the 'Earthworks retirement ecovillage'. This idea of creating an ecovillage as a home was on the edge of my experience throughout my childhood.

Secondly, commencing my doctoral research in my late twenties, I was in a stage of life where thoughts of creating a home and family were at the forefront of my mind and that of my peers. As someone with a strong environmental consciousness, I am interested in what is the 'most sustainable' way to achieve this in the Australian context, as well as how this can be done whilst regaining a sense of community that can often seem lost when living in big cities. All these reasons, academic and personal, have contributed to a rich research experience.

⁸ an alternative form of housing construction that is not particularly common in Australia.

Chapter 2. Household consumption and intentionally sustainable communities

This chapter situates the current thesis within the bodies of literature associated with sustainable consumption, grassroots innovation and intentional communities⁹. It follows on from the global context and rationale for the research provided in Section 1.1 – 1.3. These discussed the unsustainable impacts to the Earth System inflicted by human civilisation in the 'Anthropocene' period, emphasising that global governance bodies at the highest levels have recognised that profound changes to societal consumption patterns are needed to address these impacts.

Section 2.1 reviews the literature describing the significance of unsustainable levels of private and household consumption on the global environment, particularly high-consumption lifestyles of the developed world. This literature highlights the areas of greatest environmental significance. Section 2.2 explores the different perspectives (mainstream and 'radical') that have dominated debates about changing global consumption patterns, as well as a third approach – reconfiguration. The literature on the factors which influence the sustainability of consumption is summarised in Section 2.3. Frameworks and indicators which have been used to guide analysis are also introduced.

Section 2.4 focuses on the role that innovative niches, particularly within civil society, can play in seeding systemic change. The emerging research area of grassroots and community-led innovations for sustainability is discussed within the wider context of socio-technical transitions. Intentionally sustainable communities (primarily ecovillages and cohousing communities) are discussed in Section 2.5 as an innovative grassroots niche in which participants actively pursue radically different lifestyles with reduced consumption patterns.

This chapter concludes (Section 2.6) by firstly describing the implications of this review of the literature, and secondly presenting the key research objectives that will be explored later in the thesis.

2.1 The global environmental impact of household consumption

As the discussion of the Anthropocene in Section 1.1 highlighted, scientific evidence and understanding of the risk of human-induced environmental disasters on continental to planetary

⁹ Due to linguistic constraints of the researcher, the review focused on literature which has been written in, or translated into, English

scales is strong. Nevertheless, the predominant development paradigm based on consumption and economic growth largely ignores this risk (Jackson 2009; Rockström et al. 2009)¹⁰.

The analysis of global ecological footprints makes it clear that the safe and just space for humanity (Raworth 2012) cannot have the global population all living lifestyles with the current ecological footprints of the most affluent nations. Given the disproportionate contribution of the most affluent nations to planetary stress, and the position of these nations as representing a commonly held vision of what the 'good life' looks like, reducing consumption to a sustainable level in the developed world is imperative. Research to understand the environmental impacts of consumption from a household perspective, and how to make it more sustainable, will be the focus of the first half of this chapter.

The significance of private and household consumption, particularly in the developed world, as a central driver of ecological degradation has been receiving increased emphasis (Schor 2005). Product life-cycle analyses (LCA), such as those used to calculate ecological footprints, show that all consumption activities cause direct environmental impacts (e.g. GHG emissions from a car during use) and embodied (or lifecycle) impacts (Lin et al. 2017; Schanes, Giljum & Hertwich 2016). LCA's consider that a 'consumed good or service embodies all the resources, including energy, necessary to provide it to the consumer' (Lin et al. 2017, p.56). This allows all the environmental impacts associated with the entire life-cycle of a good or service to be accounted for, from resource extraction, processing, manufacturing and packaging, storage and transportation, use and disposal, and including any losses occurring throughout the process. Therefore the consumption impact of a piece of food, for example, includes 'not only the plant or animal matter people eat or waste in the household, but also that lost during processing or harvest, as well as all the energy used to grow, harvest, process and transport the food' (Lin et al. 2017, p.56).

A substantial proportion of global material production and consumption, along with their associated environmental impacts, can be linked to attempts by individuals and households to satisfy their needs and desires (Capstick et al. 2014; Druckman & Jackson 2008). Many critiques have been made of the individualisation of responsibility for reducing the environmental impacts of consumption, and these are discussed in Section 2.2.1. Practices which contribute to consumption are significantly shaped by social norms, habits, and existing physical and social infrastructures and systems, which individuals have limited scope and ability to control (Shove & Walker 2010). An understanding of the environmental footprint of household consumption 'can provide insights into the social determinants of environmental impacts and can inform household actions directed

¹⁰ Modern society is based on a model of well-being which understands that 'increasing consumption of economic goods and services leads to improved well-being: a higher standard of living and a better quality of life across society' (T. Jackson 2008, p. 704).

toward reducing footprints' (Ivanova et al. 2016, p.527). Successful approaches to changing consumption patterns will ultimately involve many different actors at different scales, and at different points of the production and consumption system (Geels et al. 2015a).

Consumption at the household scale represents a point of entry with significant scope for creating change in this system. The World Bank listed household final consumption expenditure as a percentage of GDP in 2013 as: 60% Worldwide, 54.8% in Australia, 61.8% amongst OECD members, 57.3% in the European Union and 68.6% in United States (The World Bank; World Development Indicators 2016).

In terms of environmental impact, recent analysis by Ivanova et al (2016) determined that 65% (\pm 7%) of global GHG emissions, and between 50% and 80% of total land, water and material use, arose from household consumption. This expanded on analysis by Hertwich & Peters (2009) that focused exclusively on greenhouse gas (GHG) emissions. They separated CO₂ emitted by households and governments and found that globally, 72% of GHG (measured as CO_{2-e} emissions) are related to household and 10% to government consumption, with the other 18% related to investments (Hertwich & Peters 2009). Within the proportion of emissions related to household consumption, the indirect emissions, associated with carbon embedded in goods and services, are particularly significant. It's estimated they account for between 70% and 80% of household GHG emissions (Baiocchi & Minx 2010; Capstick et al. 2014; Druckman & Jackson 2008; Moll & Remond-Tiedrez 2011).

2.1.1 Priority Consumption Domains

Research into the life cycle environmental impacts of final consumption expenditure has identified three priority areas for action (Hertwich & Peters 2009; Spangenberg & Lorek 2002; Tukker et al. 2010). Tukker et al (2010) summarise the priority domains as mobility (automobile and air transport, including holiday travel), food (meat and dairy, followed by the other foodstuffs), and home building, demolition and the use of energy using products (EuPs) (heating/cooling, lighting, washing, showering, appliances). Together, these domains 'account for 70% to 80% of the life cycle environmental impacts in industrialised countries' (Tukker et al. 2010). According to Spangenberg & Lorek (2002), these are also the consumption clusters over which individuals or households have significant influence (see Figure 2-1).

Consumption clusters	Influence of private households	Environmentally relevance
Clothing	X	
Education/training		X
Food	X	X
Health care		X
Construction/housing	X	X
Hygiene	X	
Cleaning	X	
Recreation	X	
Social life		X
Transport	X	X

Source: Lorek et al. (1999).

Figure 2-1: Consumption categories where households can make a difference (Spangenberg & Lorek 2002)

Table 2-1 provides a breakdown of GHG footprint by consumption categories for selected nations from the analysis by Hertwich & Peters (2009). In addition to identifying the same priority areas discussed above, they also found significant structural changes in consumption patterns occurred as income (expenditure per capita) increased. The significance of manufactured goods and mobility increases sharply with rising income, causing the largest GHG emissions at high expenditure levels.

Table 2-1: Per Capita GHG Footprint of selected Nations in 2001, and breakdown by contribution from different consumption categories (modified from Hertwich & Peters (2009))

Country	Footprint (tCO ₂ -e/p)	Population (million)	Construction	Shelter	Food	Clothing	Manufactured products	Mobility	Service	Trade
Australia	20.6	19.4	9%	21%	16%	2%	8%	16%	16%	11%
United States	28.6	277.5	7%	25%	8%	3%	12%	21%	16%	8%
Germany	15.1	82.0	8%	22%	13%	4%	11%	22%	17%	5%
Indonesia	1.9	213.3	8%	20%	28%	1%	4%	22%	16%	1%
China	3.1	1269.9	25%	12%	27%	3%	10%	8%	15%	2%

Household consumption research indicates that direct and indirect household consumption has significant influence on environment impacts. It also emphasises that while the environmental impacts of consumption are felt on a global scale, the site of a large proportion of consumption is local, and often very personal. The consumption of goods and services is a daily activity, carried out in order to satisfy needs and wants in a manner that is generally perceived to improve quality of life. The local and everyday nature of consumption implies that changes in consumption patterns do not necessarily need to stem from global or national initiatives, particularly in the priority areas identified. Given the strong links between consumption and sustainability, the next section will

discuss two differing consumption discourses that arose following the publication of the Agenda 21 action plan (United Nations 1992) and have since dominated debate.

2.2 Policy approaches to sustainable consumption

The need to change consumption patterns has long been identified as a sustainable development goal. The Brundtland Report stated that 'sustainable development requires that those who are more affluent, adopt lifestyles within the planet's ecological means' (WCED, 1987 p.9, cited in (Røpke 2015)). The Agenda 21 action plan formulated at the Earth Summit in Rio de Janeiro in 1992 recognised unsustainable patterns of consumption as a major factor in the deterioration of the global environment. It addressed sustainable consumption policy in a chapter on 'Changing Consumption Patterns'(United Nations 1992, para.4.1-4.27). Since then, recognition of the importance of both consumption and production systems to sustainability has continued to grow amongst world leaders. However, as Lebel and Lorek (2008) point out, that the development of a 10-year framework on Sustainable Consumption and Production (SCP) only began after the World Summit for Sustainable Development in 2002 indicates the slow speed of progress. Influential global governing bodies have now recognised that profound changes to lifestyles and societal consumption patterns will be required in order to address human-induced environmental degradation. Goal 12 of the UN SDGs (United Nations 2015) seeks to 'Ensure sustainable consumption and production patterns' (p.24) and recognises the lead role that must be taken by developed nations (UNEP 2015; UNFCCC 2015; United Nations 2015).

As many scholars have noted, two competing intellectual perspectives have emerged within SCP debates. The first, variously termed 'reform of the mainstream' (Seyfang 2005), 'reformist' (Geels et al. 2015a) or 'consume efficiently' (Jackson 2006), has been more generally accepted as a policy goal by OECD nations (Seyfang 2005). In essence, this idea sought consumption reform through 'promoting eco-efficiency and using market instruments for shifting consumption patterns' (Seyfang 2005, p.292–3). This perspective sits comfortably within economic and policy orthodoxy, and has sought to use market forces to modify the effects of affluence and encourage technological improvements to reduce impact per unit of consumption. The alternative to the 'reformist' perspective has been described as much more 'revolutionary', strongly critiquing capitalism, materialism and consumerism (Geels et al. 2015a). It focuses on the call for governments to develop 'new concepts of wealth and prosperity which allow higher standards of living through changed lifestyles and are less dependent on the Earth's finite resources and more in harmony with the Earth's carrying capacity'. It encourages finding ways to 'change lifestyles' (Jackson 2006), to alter conceptions of affluence to reduce consumption and improve technology without reducing quality of life, by shifting the goals and values of the social and economic development paradigm (Seyfang 2005).

Geels et al (2015), in a comprehensive review of existing research, note that the dominant positions in SCP debates are representative of deeper intellectual debates in Western society. These discussions of the concept of progress and the merits or otherwise of capitalism and free-market thinking far pre-date discussions of environmental sustainability. They argue that reducing debates about sustainable consumption and sustainable production to two dichotomous positions is harmful to efforts to foster environmental sustainability. They suggest a third approach, of 'reconfiguration' that:

firstly, helps to overcome the dichotomized SCP-debate, secondly, offers greater sustainability potential than the reformist position and is more palatable than the revolutionary position and, thirdly, accommodates new conceptual frameworks that address important SCP challenges, notably around stability and change in social-technical systems and social practices (Geels et al. 2015a, p.2).

2.2.1 Mainstream approach to changing consumption

The 'reform of the mainstream' model is seen as less disruptive to prevailing political and social norms and has been much more widely adopted as policy. A number of scholars (e.g. Sahakian & Wilhite (2013), Spurling et al (2013)) have described the mainstream policy approach as commonly expressed through three main problem framings, namely:

- Innovating technology – reducing the resource intensity of existing patterns of consumption through technical innovation – de-coupling economic growth from rising levels of material consumption.
- Shifting consumer choices – encouraging consumers to choose more sustainable options
- Changing behaviour – more broadly, encourage individuals to adopt more sustainable behaviours and discourage them from less sustainable behaviours.

The 'mainstream' approach and its framings have been widely critiqued (e.g. (Jackson 2009; Maniates 2001; Schor 2010; Seyfang 2005; Shove 2010; Spurling et al. 2013). Geels et al (2015) emphasise two key critiques, firstly that this approach has so far proved limited in delivering the desired sustainability outcomes and secondly, the intellectual foundation for this position is focused on individual decisions and actions. Seyfang (2005), for instance, concludes that whilst it may be useful as a first step, it fails to effectively promote true ecological citizenship.

Whilst technological innovation is undoubtedly important, the promise of decoupling environmental impact from consumption has not materialised. Although reductions in the energy and material intensity of many goods and services have been achieved, analysis summarised by the OECD concluded that these gains were outweighed by the growth in the volume of goods used and discarded, and changes in the structure of consumer demand (OECD 2002). For example, the impact of improving emissions standards for vehicles has been outweighed by the increase in the number

of vehicles acquired, distances driven and increasing size of vehicles (Schor 2005). More recent projections confirm that based on current trajectories, dangerous levels of climate change are likely (Anderson & Bows 2011).

Strategies such as encouraging green consumerism and independent labelling schemes have been pursued to shift consumer choices (Hamilton 2010; Seyfang 2005). The prevailing conceptualisation of the environmental problems facing humanity has been one of individualisation of responsibility. A popular book in the 1990's described *50 Simple Things You Can Do to Save the Earth*, such as putting a brick in the toilet cistern to save water (Earthworks Group 1989). Campaigns of education and exhortation for individuals to 'buy green', or 'plant a tree, save the world' are seen as politically and socially acceptable means of creating change (Maniates 2001; WWF-UK 2008). The cleverly titled book chapter *Just Another Brick in the Toilet* discusses some of the criticisms of this kind of environmental campaign. It suggests these actions are framed as a choice to be made by a consumer (i.e. not a responsibility or a necessity), and that minor actions such as reducing toilet water consumption act as salves for the consciousness of the consumer, whilst effectively serving as little more than a distraction from major systemic drivers of environmental degradation (Case 2016). Further, there is strong evidence that policies using market based incentives to encourage individuals to change behaviour have not resulted in significant changes (Moloney, Horne & Fien 2010). Inherent in market based approaches to changing individual consumer behaviours is the assumption that consumers make rational decisions based on price and available information. The many critiques of the model of rational choice can be categorised into three groups: choice is not (always) rational; the individual is not the appropriate unit of analysis regarding social action; and the pursuit of individual self-interest is not the only motivation for particular choices (Jackson 2005b).

Another idea informing the model of change of the mainstream sustainable consumption approach is that behaviours and choices are a result of attitudes and values of the individual, and therefore changing attitudes and values will change behaviour (Shove 2010). However, there is a recognised 'value-action gap' that exists between people's stated pro-environmental values and their behaviours (see, for example, Blake (1999) and Jackson (2005b)). This gives rise to the idea that habits, or 'unconscious and responsive' behaviours are complicating factors that explain the value-action gap (Spurling et al. 2013). One response to this idea is to intervene by 'nudging' habits (as proposed by Thaler and Sunstein (2008)). Whilst this approach has some effect, the magnitude of impact achievable by nudging is unlikely to be of a sufficient scale to tackle the enormous challenges faced (Spurling et al. 2013). Spurling et al (2013) argue that focusing on changing choices and behaviours has only limited effect, and also limits the scope for creating change. They ask:

is the deliberate exercise of choice, informed by values and attitudes, a useful general description of how we go about our everyday lives? Or is this rather a very specific form of behaviour which limits scope for wider analysis? (p.17)

There is plenty of evidence to suggest that relying on individual choice to change consumption patterns is 'probably doomed to failure' (Warde 2014b). However, as was discussed previously, one of the effects of the development of sustainable consumption policies is that it focused attention on the 'huge impact of specifically domestic consumption' (Welch & Warde 2015). Part of the issue with honing in on behavioural change is that consumption is often inconspicuous or unconscious (Jackson 2005b). Consumption occurs as we engage in socially-recognisable everyday activities that are about comfort and convenience (Shove 2003), or leisure, or simply as a means of getting to where we need to go (Spurling et al. 2013). Such everyday consumption is environmentally important, it is almost invisible, and although there is scope for individual choices to influence consumption outcomes, these choices are 'constrained, shaped, and framed by institutions and political forces that can be remade only through collective citizen action, as opposed to consumer behaviour' (Maniates 2001, p.50). Despite this, changing unsustainable household consumption patterns remains a crucial action for ongoing sustainable development (OECD 2002).

As outlined, many scholars have critiqued ideas informing the theories of change and associated interventions behind these 'reform of the mainstream' problem framings, and make the case that an approach that focuses on social practices is likely to be more effective (Halkier, Katz-Gerro & Martens 2011; Røpke 2009; Shove 2010; Warde 2005). Compared with traditional theories of creating pro-environmental behaviour change, social practice theory 'raises a series of radically different questions about how to create more sustainable patterns of consumption' (Hargreaves 2011, p. 84). The social practices theoretical perspective will be discussed in more detail in Chapter 3.

The next section will explore the ideas contained in the 'radical approach' to sustainable consumption.

2.2.2 The alternative approach to sustainable consumption

The ideas expressed in the alternative approach to sustainable consumption policy in the Agenda 21 report (United Nations 1992), advocated a shift in values and goals for wealth, prosperity and lifestyles which respect the Earth's carrying capacity. The failure of existing sustainable consumption policy interventions to have a meaningful effect on reducing environmental impact highlights the importance of providing an appropriate and supportive socio-technical context for action. Improving technologies, changing consumer choices and individual behaviour are not sufficiently radical to achieve the transitions required in 'lifestyles, infrastructure and social and

economic governance institutions' (Seyfang 2005, p.303) to embed sustainability deeply in the operating frameworks of all societies.

Geels et al (2015) discussed a number of different approaches to the need to change the fundamental structures underpinning production and consumption systems. These can be loosely termed New Economics, changing cultural values and worldviews, and grassroots innovations and localism. This framing will be used to discuss the literature from these approaches below.

New Economics

'New Economics' has emerged in recent years as an approach seeking to develop a coherent theoretical foundation for research, policy and action that embraces sustainable consumption and environmental governance. It developed out of the environmental movement, as an approach based on the 'belief that economics cannot be divorced from its foundations in environmental and social contexts, and that sustainability requires a realigning of development priorities away from the primary goal of economic growth towards well-being instead' (Seyfang 2010, p.7627). New Economics encompasses areas of study missed by traditional economics, such as: 'how organisations work (institutional economics), the contribution of nature (ecological economics) and human behaviour (socio-economics)' (Boyle 1993, p.5). At its core, New Economics advocates for structural changes to the logics that underpin modern capitalism – a challenging concept for the existing economic paradigm (Geels et al. 2015a). It is built on new conceptions of wealth and work, new uses of money, and the integration of ethics back into economic life (Seyfang 2009). Key ideas include greater focus on well-being and quality of life rather than GDP growth, turning economic focus away from the constant pursuit of growth, a greater emphasis on the role of civil society, and alternative conceptions of ownership e.g. sharing economy, product-services (Cohen, Szejnwald Brown & Vergragt 2013; Geels et al. 2015a; Jackson 2009; Schor 2010). New economics scholars argue that we need to move to a post-growth, steady-state or de-growth economic model (Simms, Johnson & Chowla 2010).

There are signs that this shift in goals and values is occurring. Many researchers, academic institutions and governments are working to develop new concepts of wealth and prosperity, and adopt new indicators of progress (Fleurbaey 2009; Frye Hargens 2002; Jackson 2008, 2009; Kahneman et al. 2004; Kelly 2012). In the developed world, there is clear evidence to support the need to shift the conceptualisation of what constitutes progress and prosperity. In the mid-1970s, Easterlin found that 'economic growth in a country did not necessarily lead to a rise in average happiness' (1974). Research continues to support these findings. Most advanced economies, where real per capita income has quadrupled over the last 50 years, have seen little change in aggregate levels of subjective well-being (Helliwell & Putnam 2004). Analysis of the relationship between

subjective well-being and Gross Domestic Product (GDP)¹¹, illustrated in Figure 2-2, suggests that once GDP per capita reaches a certain point (~US\$15,000 per capita) large increases in GDP per person have relatively little effect on well-being (Inglehart et al. 2008).

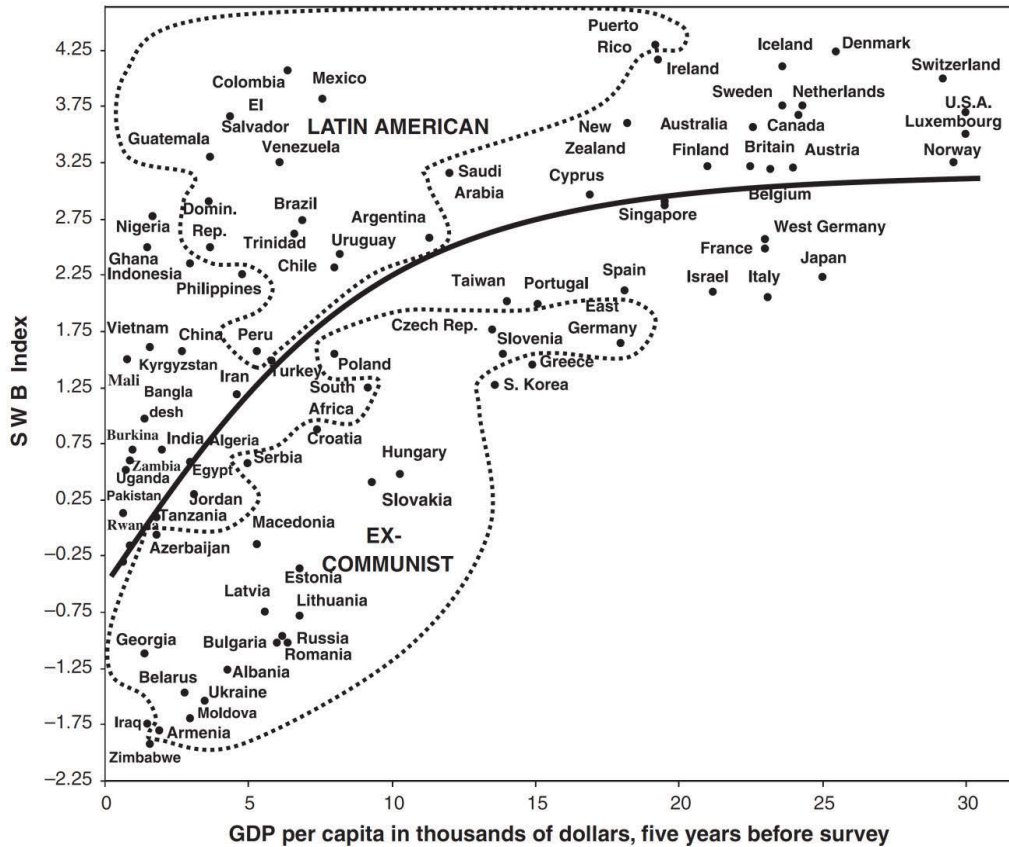


Figure 2-2: Relationship between subjective well-being (SWB) and economic development (as measured by per capita GDP) for various global societies (Inglehart et al. 2008).

A similar relationship between well-being and environmental impacts has been found, with research indicating that increased consumption (measured by ecological footprint) has no direct effect on objective well-being, and may actually decrease well-being in high-consumption countries (Dietz, Rosa & York 2009; Knight & Rosa 2011).

This evidence suggests that the common view that consumption is closely related to welfare, and therefore should be maximised, loses validity above a certain level of consumption (Knight & Rosa 2011; Lintott 1998). One study estimated that UK household GHG emissions could be reduced by 37% (on 2004 levels) by eliminating unnecessary consumption¹² (Druckman & Jackson 2010). It is quite possible that the modern consumption culture of the developed world, and growing sections

¹¹ Personal consumption expenditure is a major component of GDP, therefore GDP can be used as a useful, although limited, proxy indicator for consumption (Jackson 2006; Kubiszewski et al. 2013).

¹² This was based on a minimum income standard required to enjoy a decent life. It was defined as 'more than just, food, clothes and shelter. It is about having what you need in order to have the opportunities and choices necessary to participate in society' (Bradshaw et al 2008, cited in Druckman & Jackson 2010).

of the emerging world economies, is both detrimental to ecological sustainability and may adversely affect our happiness and well-being. In general, people consider themselves to be happier when they are surrounded by trusting people, and say they are likely to trust others. However, studies from the US and UK looking at measures of trust in societies (e.g. how many people agree that 'most people can be trusted') have been declining significantly (Putnam 2001).

It is clear that current consumption patterns of the affluent world are environmentally unsustainable, and could be detrimental to well-being. Jackson (2008) goes further and describes ever-increasing material consumption as a form of social pathology, concluding that:

the pursuit of consumption growth – a specific model for the pursuit of well-being – appears to have systematically undermined some of the conditions (family, friendship, community, trust and so on) on which we know that people's well-being depends (p.715).

Whilst there is general agreement that sustainable consumption policies should enhance quality of life while respecting the limits of the Earth's natural systems (Jackson 2006), the prevailing paradigm of economic growth is still implicit in most definitions of sustainable consumption (see Jackson (2007)). One possibility raised by the literature supporting New Economics is that living in more ecologically sustainable ways may be beneficial for both individuals and the planet (Brown & Kasser 2005), and that embracing more sustainable consumption patterns may allow us to 'collectively devise a society in which it is possible to live better (or at least as well as we have done) by consuming less' (Jackson 2005a, p.33).

Changing cultural values

Hedlund-de Witt (2014) describes the dominant 'post-positivist, modern, scientific/scientistic' worldview as one which lacks the openness and reflexivity required to address sustainability issues adequately. In her overview of different worldviews and how they affect people's understanding of 'development', 'quality of life', and sustainable development, Hedlund-de Witt (2014) describes how a modern worldview leans heavily toward more materialist values and understands development primarily in economic and material terms. Hence it considers continual consumption growth as integral to progress. Post-modern, and integrative worldviews are described as more open to changing lifestyles in order to pursue sustainable development, and to post-materialist values which are accepting of conceptions of progress that don't require continual growth of consumption. The phenomenon of downshifting and voluntary simplicity has been widely documented; people accepting lower incomes in return for increased quality of life has also been well documented (Etzioni 1998; Hamilton & Mail 2003; Jackson 2009; Maniates 2002; Schor 1998). Therefore, another strategy for shifting to sustainable consumption patterns is to facilitate shifts in worldviews, although it is recognised that this may be a slow process of cultural change.

Grassroots & localism

Globally and locally organised social movements and civil society groups have been particularly active pursuing alternative lifestyles that endeavour to be more sustainable and focused on well-being. Research into 'grassroots innovations' explores the emergence of local initiatives that aim to respond to local and global issues at a community level, through efforts to decentralise production of resources such as energy and food and increase local self-sufficiency (Geels et al. 2015a). A well-established example is the intentional communities movement, comprised of many communities around the world with explicit goals of living in an environmentally sustainable manner and striving to 'ensure the well-being of all life-forms into the indefinite future' (GEN 2015). Other examples include the Transition Towns movement (Seyfang & Haxeltine 2012; Smith 2011) and the collaborative consumption movement (Belk 2014; Martin & Upham 2016).

There are many cross-overs between these three approaches to implementing radical changes to sustainable consumption. Common to many grassroots initiatives, for example, are post-materialist values and ideals of downshifting, voluntary simplicity and other related ideas that challenge prevailing consumerist norms; instead pursuing reductions in consumption without impacting quality of life.

2.2.3 The middle way – reconfiguration of socio-technical systems and practices

As previously noted, Geels et al (2015) suggest a third approach within the SCP debate that tries to present a middle-path with the promise of greater sustainability benefits than the mainstream approaches aiming to simply correct market failures. It is, however, less challenging to the dominant capitalist economic paradigm, and therefore more likely to gain acceptance and achieve change than the radical approach. At its core, the reconfiguration position argues that transitions to new socio-technical systems are required, as many current systems (of economic, technological and social practice) are failing. An important aspect of this approach is that it accommodates newer conceptual frameworks that bring focus to social practices and socio-technical systems as key loci of sustainability changes.

This approach views consumption as embedded within the habits, routines and rules of everyday practices and daily life. It is rooted in domains of practices such as mobility, food, energy provision and use (Geels et al. 2015a). These domains have clear relevance to the priority areas for action highlighted in Section 2.1.1. Exemplary approaches are described as the multi-level perspective (Geels 2002, 2011), discussed further in Section 2.4 and social practice theory (Shove, Pantzar & Watson 2012; Warde 2005), discussed in detail in Chapter 3.

The reconfiguration approach also advocates making a pragmatic decision to focus the scope of sustainable consumption policies on achieving environmental sustainability:

assuming that reconfigured transport, energy, agro-food systems may lower environmental pressures. It does not aim to simultaneously solve wider socio-economic problems as such [sic] poverty, inequality, problems in democratic accountability, happiness (Geels et al. 2015a, p.7).

Placing different approaches to sustainable consumption into different categories is useful as an analytical heuristic to help understand the SCP field (Geels et al. 2015a). In doing so, there are inevitable simplifications and many different points of cross-over between the approaches. Grassroots innovations, described as focusing on new production-and-consumption systems at a local level, is particularly relevant to this research project. Geels et al (2015) position this within the 'revolutionary' or radical approach to sustainable consumption, whilst noting that grassroots innovation scholarship draws heavily on the multi-level perspective and practice theories. This draws attention to the diversity of concepts captured within the radical approach to sustainable consumption that are highly relevant. Whilst at the core there is a challenge to underlying capitalist logics, there are also many concepts that are gaining high-level institutional support, such as alternative measures of economic progress with a greater focus on well-being (Stiglitz, Sen & Fitoussi 2010).

To this point, the general concepts of sustainable consumption have been discussed. The need to improve the sustainability of both production and consumption patterns is now widely accepted; how best to achieve this, however, has been the subject of long debate. The reconfiguration position suggests a focus for action that moves beyond the limited scope and effectiveness of the 'mainstream' sustainable consumption approaches discussed. This research project does not intend to 'choose' an approach, but rather draw on relevant aspects of both the reconfiguration and radical framing. However, the contribution of the reconfiguration framing is a welcome addition in the discussions of sustainable consumption; particularly the focus it places on both issues of environmental sustainability and the need to pay greater attention to changing socio-technical systems and social practices (Geels et al. 2015a). Later in this chapter, the role of grassroots innovative niches in seeding wider systemic change will be explored, with a particular emphasis on intentional communities. The usefulness of focusing on social practices when considering changes to consumption patterns will be discussed further in the following chapter. Before focusing on grassroots niches, key factors and frameworks that can guide explorations of sustainable consumption will be summarised in Section 2.3.

2.3 Sustainable Consumption: factors and frameworks

Whilst understanding of the factors that affect the environmental impacts of various types of consumption is growing, a number of scholars have noted that no accepted framework for

evaluating activities across consumption areas has emerged (Schanes, Giljum & Hertwich 2016; Seyfang 2010).

there has to date been no systematic means of evaluating activities to assess their contribution to sustainable consumption (Seyfang 2010, p.7628)

While a rapidly growing body of literature has investigated how consumers can reduce carbon footprints in key consumption areas... an overall framework that allows structuring those options across all consumption areas is still missing. (Schanes, Giljum & Hertwich 2016, p.1033)

In order to establish a general understanding of what may constitute sustainable household consumption, this section will outline the different intervention points for sustainable consumption and production patterns as well as the key factors that influence household consumption impact. It will then summarise a specific framework for reducing consumer carbon footprint (Schanes, Giljum & Hertwich 2016), and a broader framework based on New Economics principles (Seyfang 2009). These will be used later in the thesis as a qualitative guide to understanding sustainable consumption in the case study communities.

Whilst a widely accepted framework for sustainable consumption has been slow to emerge, there is a growing body of literature analysing lifecycle impacts of final consumption. This work has, for instance, identified the priority areas for action discussed in Section 2.1.1. Tukker et al (2010) summarise the factors and variables that explain differences in the environmental impacts of different households and individuals and therefore indicate the kind of consumption patterns that are likely to be more sustainable. These are presented in Table 2.2.

Table 2-2: Factors explaining the varying environmental impacts from consumption of different households

Factor	Description
Income:	Rising income allows households to acquire greater quantities of material goods and use more energy, therefore creating a greater environmental impact. There is some contention regarding whether the increase in environmental impacts is less than proportional to income increase (due to greater spending on luxury goods), or more than proportional (Druckman & Jackson 2008; Tukker et al. 2010; Weber & Matthews 2008b)
Household Size:	Household size has an inverse relationship to per capita environmental impacts. People living together can, and usually do, share energy-consuming appliances, and require less living space per capita, which is particularly important for heating and cooling demands. However, in absolute terms, larger households have larger environmental impacts than smaller households (Weber & Matthews 2008b)
Location:	In industrialised countries, people living in a rural location typically create greater environmental impacts than urban residents, due to the general trends of reduced heating and cooling requirements in the denser urban households, and greater use of private cars for transport by rural residents (Tukker et al. 2010)
Car ownership:	People that own cars generally use them, and therefore have a greater footprint than those who use public transport regularly instead (Tukker et al. 2010).
Food consumption patterns:	Meat and dairy are significant contributors to environmental impact of food consumption, therefore wholly or largely vegetarian or vegan diets decrease an individual's impact – meat and dairy products account for a greater proportion of global emissions than worldwide road transportation, trains, shipping and air travel (Bailey et al, cited by (Capstick et al. 2014, p.431). Locally harvested, seasonal or organic food also generally have a lower environmental impact (Weber & Matthews 2008a).
International (and interregional) trade:	Globalisation is considered to have increased the supply-chain environmental impacts of household consumption, primarily because production has generally been shifted to industrialising countries that use less efficient technologies for production (Baiocchi & Minx 2010).
Social and cultural differences:	Different countries of similar income levels (e.g. Australia, the United States and the United Kingdom) consume energy and materials at different quantities. Some of this difference is considered to be due to differences in prevailing cultural norms and understandings regarding consumption (Maréchal 2009).
Geographic location and housing type:	Captures an array of factors, such as extreme climatic regions, and countries or regions that have a housing mix with greater or lesser proportions of owner-occupiers or renter-occupiers, as well as other policy mixes regarding energy that can influence consumption (Hargreaves, Nye & Burgess 2008)

An important point to remember when analysing sustainable consumption decisions is whether, either directly or indirectly, there is a rebound effect (Jackson 2005b). For example, not owning a car generally indicates a reduction in environmental impacts from transport, and likely a monetary saving. If the money saved by not owning a car is spent on another activity with significant environmental impact, such as air travel, then the overall impacts of consumption may indirectly be more environmentally harmful. More directly, ownership of a fuel-efficient car – with reduced fuel costs – may result in increased car usage.

2.3.1 New Economics indicators for sustainable consumption

In response to the lack of a systematic means of evaluating how different activities contribute (or not) to sustainable consumption, Seyfang (2009) developed a qualitative evaluation framework based on the key concepts of the New Economics approach to sustainable consumption. Such an approach embodies characteristics of: 'localisation, reducing ecological footprints, community-building, collective action, and building new infrastructure of provision' (p.61). These indicators provide a useful guide to allow the systematic, qualitative, evaluation of the contribution of activities and initiatives to sustainable consumption. The indicators, with a brief description of each, are shown in Table 2-3:

Table 2-3: New Economics indicators for sustainable consumption (Seyfang, 2009 p.62)

Indicator	Description
Localisation	Making progress towards more self-reliant local economies; import-substitution; increasing the local economic multiplier; reducing the length of supply chains
Reducing ecological footprints	Shifting consumption to cut its social and environmental impact on others, to reduce the inequity of current consumption patterns; cutting resource use; demand-reduction; carbon-reduction and low-carbon lifestyles
Community-building	Nurturing inclusive, cohesive communities where everyone's skills and work are valued; growing networks of support and social capital; encouraging participants to share experience and ideas.
Collective action	Enabling people to collaborate and make effective decisions about things which affect their lives; changing wider social contexts by institutionalisation of new norms; active citizenship.
Building new infrastructure of provision	Establishing new institutions and socio-technical infrastructure on the basis of New Economics values of wealth, work, progress and ecological citizenship.

One of the key aspects of New Economics thinking, as described by Seyfang (2009), is that it envisages a key role for the active ecological citizen (Dobson 2003) as opposed to the green consumer. That is, it champions actors who play a role in shaping the options available to them, rather than just choosing between those presented (there are links to the idea of the prosumer mentioned above). Whilst taking a pluralistic approach to behaviour change theories, New Economics approaches to sustainable consumption are underpinned by the recognition that changes to existing systems of provision are required. They acknowledge and support the need for socio-technical transitions within the existing mainstream regimes, which are comprised of 'interrelated technologies, institutions, norms, cultures and expectations' (Seyfang 2009, p.61).

This understanding is clear from the indicators described in Table 2-3, which focus attention on changing the socio-technical context in which consumption occurs. Actually 'reducing ecological footprints' is addressed in one indicator, while the others consider how ecological citizens are creating the capacity and institutions to enact socio-technical transitions. From this, the importance of community-led, grassroots initiatives for sustainable consumption can be seen. Grassroots initiatives will be discussed in more detail in Section 2.4. While the focus on factors other than 'reducing ecological footprints' is important, this framework gives limited practical guidance as to which strategies can be used by consumers to lower their footprints.

2.3.2 Framework for carbon footprint reductions

Schanes et al (2016) have developed a framework for strategies to reduce consumer carbon footprints (CF), focussing on 'ambitious, but technically and socioeconomically feasible strategies for consumers to lower their carbon footprint' (p.1033). Whilst CF is not as holistic a metric of sustainable consumption as ecological footprint (EF), it is the largest single component of the global ecological footprint and accounts for roughly 60% of the global EF (Global Footprint Network 2017b). Due to its strong relationship to EF, it is a useful metric for the sustainability of consumption.

The framework outlined four high-level categories for reducing consumption-based emissions: direct reduction, indirect reduction, direct improvement and indirect improvement. Within these categories are nine strategies. These are outlined, along with the key environmental argument linking each strategy to emissions reduction, in Table 2.4.

Table 2-4: Mitigation strategies and sub-strategies and resulting impact on greenhouse gas emission (Schanes, Giljum & Hertwich 2016)

Major strategies	Sub-strategies	Main environmental argument
Direct Reduction	Consumption reduction	<p><i>Decrease in embodied emissions</i></p> <ul style="list-style-type: none"> • Smaller product stock <p><i>Decrease in direct emissions</i></p> <ul style="list-style-type: none"> • Smaller product stock • Less energy use
	Curtailement	<p><i>Decrease in direct emissions</i></p> <ul style="list-style-type: none"> • Less energy use
	Shift between consumption categories	<p><i>Decrease in embodied emissions</i></p> <ul style="list-style-type: none"> • Smaller product stock <p><i>Decrease in direct emissions</i></p> <ul style="list-style-type: none"> • Smaller product stock • Less energy use
Indirect reduction	<p>Changes of consumption patterns</p> <ul style="list-style-type: none"> • reuse • do-it-yourself 	<p><i>Decrease in embodied emissions</i></p> <ul style="list-style-type: none"> • Lifetime extension • Smaller product stock <p><i>Decrease in embodied emissions</i></p> <ul style="list-style-type: none"> • Decrease of energy intensive production processes <p><i>Decrease in direct emissions</i></p> <p><i>Lower carbon intensity of electricity and power (e.g. solar panels)</i></p>
	<p>Changes in using behaviour</p> <ul style="list-style-type: none"> • rent / share • repair / maintain 	<p><i>Decrease in embodied emissions</i></p> <ul style="list-style-type: none"> • Smaller product stock <p><i>Decrease in direct emissions</i></p> <ul style="list-style-type: none"> • More efficient technology (e.g. cars) <p><i>Decrease in embodied emissions</i></p> <ul style="list-style-type: none"> • Lifetime extension • Smaller product stock
	<p>Changes in disposal patterns</p> <ul style="list-style-type: none"> • donate / resell 	<p><i>Decrease in embodied emissions</i></p> <ul style="list-style-type: none"> • Lifetime extension • Smaller product stock
Direct improvements	<p>Purchase of efficiently produced products</p> <ul style="list-style-type: none"> • material efficiency • carbon intensity • energy efficiency 	<p><i>Decrease in embodied emissions</i></p> <ul style="list-style-type: none"> • More efficiently produced
	<p>Purchase of products that are more efficient in use</p> <ul style="list-style-type: none"> • energy efficiency • carbon intensity 	<p><i>Decrease in direct emissions</i></p> <ul style="list-style-type: none"> • More efficient technology <p><i>Decrease in direct emissions</i></p> <ul style="list-style-type: none"> • Cleaner technology (green electricity and power)
Indirect improvements	<p>Changes in disposal behaviour</p> <ul style="list-style-type: none"> • sort for recycling 	<p><i>Decrease in embodied emissions</i></p> <ul style="list-style-type: none"> • More efficient waste management

2.3.3 Summary

To this point, this chapter has highlighted the role of household consumption in sustainability debates, explaining the potential scale of reduced environmental impact by changing household consumption patterns. It has discussed the two dominant perspectives on how changes to consumption patterns can occur, as well as a third perspective - reconfiguration - suggested by Geels et al (2015). This review has not aimed to determine a 'correct' perspective, but acknowledges the reasons cited by Geels et al (2015) in advocating for a third approach, namely that the mainstream approach doesn't seem to be achieving the required aims, and that the revolutionary approach is currently too challenging (as a coherent whole) to be accepted by the current paradigm. The reconfiguration approach then represents a promising middle path. This does not mean that the other perspectives can, nor should be ignored, as they deliver important prompts and insights. In fact, the review of the New Economics indicators for sustainable consumption in Table 2-3 suggests many points of agreement between the New Economics approach to sustainable consumption (as conceptualised by Seyfang (2009)) and the reconfiguration approach of Geels et al (2015). With this stance in mind, this section summarised a few key factors and frameworks to help analyse attempts to create more sustainable consumption patterns and practices. The next section will look at the role of innovative niches seeding change for socio-technical transitions, with a particular focus on grassroots innovations.

2.4 Grassroots innovative niches in sustainability transitions

To this point, this chapter has explored the current deficient response in addressing the sustainability challenges faced globally, epitomised by the continued debates around the best approaches to combat climate change and promote movement towards a low-carbon economy. In response, a growing body of research claims that system-wide transformations are required (Jackson 2009; O'Brien & Sygna 2013) and proposes alternative visions for how transitions in the social, technical and economic paradigms may occur (Raskin et al. 2002; Spratt et al. 2009). Concurrently, there has been growing interest in how significant socio-technical transitions take place, and how they may be governed to overcome persistent sustainability challenges (Grin, Rotmans & Schot 2010). The next section introduces some of the key aspects of the sustainability transitions literature relevant to this research.

At its core, the reconfiguration position discussed in Section 2.2.3 argues that transitions to new socio-technical systems are required, as many current systems (of economic, technological and social practice) are failing. The study of 'sustainability transitions' has tended to focus on how a fundamental shift occurs in socio-technical systems, such as energy supply, water supply or

transportation (Markard, Raven & Truffer 2012). A socio-technical transition involves changes across many different dimensions: 'technological, material, organizational, institutional, political, economic, and socio-cultural' (p.956), including changes to user practices (Markard, Raven & Truffer 2012). The field of sustainability transitions has grown in response to a broad understanding that entrenched socio-technical systems have a tendency to undergo incremental rather than radical change, but that incremental change is insufficient given the scale of sustainability challenges facing humanity (Markard, Raven & Truffer 2012).

One prominent theory within the transition studies literature is the multi-level perspective (MLP), 'a middle-range framework for analysing socio-technical transitions to sustainability' (Geels 2011, p.24). MLP developed through case studies of historical transitions, such as from cesspools to sewer systems (Geels, 2006). A major focus of policy interest has been on how existing unsustainable regimes might be steered in more sustainable directions. MLP sees social transitions as emerging through dynamic interactions and realignments between three 'vertical' analytical levels: niches (the locus for radical innovations), socio-technical regimes (the locus of established practices and associated rules that stabilise existing systems) and an 'exogenous socio-technical landscape' (Geels 2011, p.26). However, the different analytical levels are not seen as a nested hierarchy, rather they represent degrees of structuration, with niche levels having the least structuration (Geels 2011). Transitions can occur through different pathways, though a conventional view is that changes in the 'landscape' exert pressure on the existing regime, disrupting the regime and creating opportunities for innovations which have built up internal momentum to move and grow from a 'niche' space into the regime (Hargreaves, Longhurst & Seyfang 2013).

Within this research project, MLP is used to frame the overall exploration of sustainability transitions and guide the focus towards niche innovations in sustainable consumption patterns, particularly within civil society. Geels (2011) acknowledges the usefulness of the MLP in this regard, as a 'heuristic device' that can guide the researcher through relevant questions and problems (p.34). Niches are important within the transitions literature as spaces protected from full exposure to the selective processes and pressures of the regime (Kemp, Schot & Hoogma 1998), that allow new ideas, practices and artefacts to develop and mature (Seyfang 2009). Kent (2012) explains that 'as agents are most free from structure in niches and as niches are the least structured elements in the MLP, new ways of local level community-based practice (actions/ behaviours), governance (political processes) and deliberation (democratic processes) can be developed and trialled' (p.219).

An important insight from MLP is that transitions occur when conditions at all three levels are aligned towards that transition (Raven, Bosch & Weterings 2010). Sufficient landscape pressure needs to exist, and the regime must be sufficiently open, stable or adaptive to accept radical innovations (Raven, Bosch & Weterings 2010). This highlights the challenges facing governance or

creation of sustainability transitions, but, also emphasizes that radical niche innovations that can react to opportunities presented by changes in the regime are crucial in socio-technical regime transformation (Seyfang & Haxeltine 2012).

2.4.1 *The grassroots as an innovative niche*

The role of the grassroots as an innovative niche, particularly concerning sustainability is an increasing focus of research (Middlemiss & Parrish 2010; Mulugetta, Jackson & van der Horst 2010; Seyfang & Smith 2007; Walker et al. 2007). This is conceptualised as an innovative niche that emphasises the role of social innovations, movements and actors emerging from civil society and the level of the local community (Seyfang & Smith 2007). It is an aspect of transitions that has tended to receive less focus than the role of technology (Seyfang & Haxeltine 2012). However, as Frantzeskaki et al (2016) argue, 'civil society initiatives can pioneer new social relations and practices' forming an 'integral part of urban transformations' (p.41). Socio-technical systems are inherently developed through a highly social and collective process, with social actors playing an extremely important role in the adoption of innovations in production and consumption systems (Smith, Stirling & Berkhout 2005).

As opposed to market-based niches, grassroots innovative niches tend to be based in civil society, which lends them different characteristics. Green market-based niches compete within the conventional market and therefore only succeed when they attract the required business interest and capital commitment and out-compete other (unsustainable) opportunities in their return on investment. Grassroots innovations, on the other hand, create a niche where different social and cultural values can be expressed, in response to perceived social needs. They often draw on voluntary input and other forms of resource and exchange that are outside the traditional market economy. Table 2.5 below outlines the key differences.

Table 2-5: Comparing the characteristics of market-based and grassroots innovations (Seyfang & Smith 2007).

	Market-based innovations	Grassroots innovations
Context	Market economy	Social economy
Driving Force	Profit: Schumpeterian rent	Social need; ideological
Niche	Market rules are different: tax and subsidies temporarily shelter novelty from full forces of the market	Values are different: alternative social and cultural expressions enabled within niche
Organisational form	Firms	Diverse range of organisational types: voluntary associations, co-ops, informal community groups
Resource base	Income from commercial activity	Grant funding, voluntary input, mutual exchanges, limited commercial activity

The factors which lead to success in the development and diffusion of grassroots innovations for sustainability that emerge directly from communities are still not well understood. Knowledge of the nature of these innovations is limited (Mulgan et al. 2007). The challenges faced by grassroots innovations are generally related to the struggle to maintain a viable and sustainable socio-technical space within a wider unsustainable regime (Seyfang & Smith 2007).

Conceptualising grassroots innovations as niches within a socio-technical system has allowed researchers to apply a Strategic Niche Management (SNM) framework for the evaluation of development and success within different grassroots niches (Seyfang & Haxeltine 2012). SNM literature has developed concepts for promoting desired systemic change through the appropriate governance of socio-technical niches. It sees successful niche growth as relying as much on processes within the niche as on changes outside the niche, and identifies three key processes for successful niche growth and emergence: managing expectations, building social networks, and learning processes (Kemp, Schot & Hoogma 1998; Schot & Geels 2008). These concepts will be discussed further in Chapter 9.

Grassroots and community level innovations seem particularly promising areas of research that emphasize the importance of social, as well as technical, innovation for sustainable household consumption and lifestyles. Intentional communities represent an example of a niche, community-led grassroots innovation. They will be considered in greater detail in the following section.

In their review of sustainability transition literature, Markard et al (2012) highlight the role of civil society and cultural movements, such as many grassroots initiatives, as an area that warrants further scrutiny for future transitions research. They also emphasize that the role of everyday practice in consumptive acts is a promising area of research. The benefits of drilling down on everyday practices when considering sustainable consumption has been discussed above, and will be expanded on in later sections of this literature review.

This section has briefly introduced the academic literature of sustainability transitions as a field of study that has focused on how necessary, yet radical transitions may occur. It then highlighted the role that niches, specifically grassroots and civil society initiatives, can play in any transition. The next section below will expand on what is meant by 'grassroots niches', and why they are important.

2.4.2 *Grassroots initiatives for sustainable development*

Community-level grassroots initiatives or 'grassroots innovations' have been defined as:

networks of activists and organisations generating novel bottom-up solutions for sustainable development; solutions that respond to the local situation and the interests and values of the communities involved (Seyfang & Smith 2007, p.585).

Grassroots innovations for sustainable development take many forms, but because they develop in the civil society and community space, they place a strong emphasis on the 'social' side of socio-technical innovation, rather than simply on greener technologies. Examples of grassroots innovations can include 'furniture-recycling social enterprises to organic gardening cooperatives, low-impact housing developments, farmers' markets and community composting schemes' (Seyfang & Smith 2007, p.585). Other groups and movements such as Transition Towns, community gardens, intentional communities and a range of new collaborative consumption ventures also fit within this framework. They create a niche for alternative social and cultural expression, often drawing motivation from social needs and/or ideological beliefs. Like other niches, the grassroots (community-level activities) can be a 'source of innovative diversity' (Seyfang & Smith 2007, p.590) that can provide the 'seeds for systemic change' (Geels 2011, p.27), if supported by prevailing regime and landscape conditions.

Frantzeskaki et al (2016) describe three key roles that civil society can play in local sustainability transitions. Most significantly for this research, local initiatives can:

pioneer and model new practices that can then be picked up by other actors (e.g. policy makers), eventually leading to incremental or radical changes in our practices and ways of organizing things. Civil society can therefore be an integral part of and driver of such transformations; it establishes new connections and through them it triggers wider change (p.42-44).

The other key roles Frantzeskaki et al (2016) describe are in filling social roles abandoned by the retreating welfare state, and acting as a hidden innovator, acting out of sight of wider society.

As discussed previously, the reliance on technological improvements and individualisation of responsibility for shifting consumption patterns through behaviour change has not produced the required impact. A major limiting factor is that individual consumption choices are 'constrained, shaped, and framed by institutions and political forces' (Maniates, 2001, p.50). Yet individuals have limited agency to achieve the change in this context - the social-technical system - that is required for sustainable consumption outcomes (Hielscher, Seyfang, & Smith, 2013 p.142). Communities provide a structure and context with the capacity to shape infrastructure and also empower individuals (Heiskanen et al. 2010) (Maniates, 2001, p.50). Heiskanen et al (2010) outline four ways that communities can help overcome the constraints on the ability of individuals to change: i) reframing the social dilemmas of sharing resources through collective action, ii) overcoming the obstacles of social conventions by collectively developing new conceptions of low-carbon lifestyles, iii) developing new infrastructures of consumption that are beyond the scope of individual change, and iv) overcoming feelings of helplessness and disempowerment in the face of global environmental problems. Communities may 'constitute an important nexus between individual

motivation and collective action' (Grabs et al. 2016, p.100) that present greater opportunities for people to improve the sustainability of their lives (Sustainable Development Commission 2011). They clearly present a better alternative than patiently waiting for national policies to be aligned with sustainability goals (Wilhite 2015).

The shift from individual to community-level decision making is a common aspect of grassroots initiatives. In particular, it is at the heart of intentional community developments such as ecovillage and cohousing communities, grassroots initiatives which will be discussed in Section 2.5. Chatterton (2013) describes this shift from individual to community-level decision making as particularly important in shifting the emphasis from individual consumer behaviour as the loci of the response to climate change and energy reduction.

Middlemiss & Parrish (2010) describe grassroots innovations as 'invariably conceived, initiated and enacted within communities' (p.7559) and relying on people who have 'limited power, limited resources and limited ability to influence others' (p.7559), this does not mean they should be ignored. By enacting bottom-up solutions, grassroots initiatives can have a wider influence by 'changing their own actions, seeking to influence others around them and seeking to change the social structure that they inhabit' (Middlemiss & Parrish 2010, p.7562).

Grassroots initiatives can be influential in multiple ways. Firstly, in addressing climate change and energy security issues, no single intervention can be relied upon to deliver the change of lifestyle, infrastructure and social and economic governance required (Seyfang 2005). Therefore multiple fronts on various scales should be employed. Secondly, the value of grassroots initiatives is more than just the sum of their parts. Some of the direct and indirect benefits that have been discussed in the literature include:

- demonstrating small-scale sustainability improvements that are tangible;
- allowing for real and measurable carbon emissions cuts, especially when small initiatives are repeated many times over;
- innovating through changing values and lifestyle practices, or novel organisational arrangements, which may facilitate the use of green technologies;
- creating a space for development of new ideas and practices, where inter-community conversation and sharing of experiences can occur;
- allowing a space for experimentation with different systems of provision;
- democratising decision-making in future carbon reduction/ sustainable improvement plans;
- being a supportive place for expressing alternative (green and/or progressive) values, which can increase innovative diversity and local resilience; and

- overcoming the sense of powerlessness by mobilising collective sustainability solutions in ways that individuals cannot (Mulugetta, Jackson & van der Horst 2010, p.7542; Seyfang & Smith 2007, p.593–5).

Considering the grassroots as a niche space that allows for experimentation and expression of different ideas and values to be practiced 'can be a powerful contrast with mainstream systems, enabling people to visualise a world where everyday practices might be different, and reflecting critically on mainstream provisioning' (Seyfang 2010, p.7625). Seyfang & Smith (2007, p.589) use the example of the East Anglia Food Link (EAFL), which promoted locally sourced organic food in schools and hospitals with marginal success. After a popular TV show criticised food served in schools, the UK government looked for ways to improve food provisioning. EAFL was identified as a pioneering source of good practice which offered an alternative to mainstream food and internalised the environmental, social, and health costs associated with globalised food systems. Though it did not replace the existing food regime by itself, once the regime was disturbed by the public outcry in response to the TV show, the EAFL niche provided a source of innovative ideas that could be drawn upon.

Grassroots initiatives such as the EAFL, or intentional communities, are only niche developments, but as the grassroots innovation agenda highlights, niche experiments within the civil society arena can play an important role in successful socio-technical transitions to more sustainable production-consumption systems (Maniates 2001; Seyfang & Smith 2007, 2010). Considering the sustainable consumption literature discussed so far, grassroots innovations that seek to have the greatest influence on changing the environmental impacts of household consumption should focus on the priority areas of housing and energy using products, food, and mobility, as well as the consumption of manufactured goods (Hertwich & Peters 2009; Tukker et al. 2010). The next section will consider sustainable intentional communities, a grassroots niche where innovation is occurring in many of these priority areas (Kunze 2012), and that holds particular promise for changing household consumption patterns.

2.5 Intentional communities as grassroots innovation

Over recent decades there has been a growing grassroots movement of intentional communities seeking to reduce material consumption, and 'reinvigorate social life', whilst maintaining a high quality of life (Litfin 2009). Intentional communities represent experiments focused and located at the meso level of household and immediate neighbourhood, rather than the micro (individual) or macro (societies, regions and nations) (Reid, Sutton & Hunter 2010). Reid et al. (2010) argue that this is an area that requires greater focus in sustainability debates, as 'sites where situated meanings of consumption practices are made salient' (Waitt et al. 2012, p.52). This movement appears to be

making progress in this regard, with members of intentional communities often reporting having 'richer and better lives even though (or perhaps because of) their reduced consumption and ecological footprints' (Metcalf 2012, p.27).

The term intentional community is a term that encompasses a diverse array of communities. The Fellowship for Intentional Communities (FIC), a global organising group consisting of 200 umbrella organisations, lists many types of intentional communities on its website, including ecovillages, cohousing communities, residential land trusts, communes, student co-ops, urban housing cooperatives, intentional living, alternative communities, and cooperative living (FIC 2015). Metcalf (2004) presents the following as a definition of an intentional community:

Five or more people, drawn from more than one family or kinship group, who have voluntarily come together for the purpose of ameliorating perceived social problems and inadequacies. They seek to live beyond the bounds of mainstream society by adopting a consciously devised and usually well thought-out social and cultural alternative... (p.9)

Like Metcalf (2004), Kunze (2012) stresses the difference from 'natural' communities such as families, as intentional communities develop common aims, and emphasise communal living. However, she adds to Metcalf by considering that intentional communities aim for the 'transformation of society' (Kunze 2012, p.58).

The intentional community has a long history, going back at least 2,000 years to the time of the Roman Empire (Schehr 1997, cited in Ergas, 2010). Over the last few centuries, intentional communities have been associated with a withdrawal from society in response to rapid cultural changes. However, Ergas (2010), again citing Schehr (1997), describes a recent fourth wave of intentional communities as having a much greater focus on integrating and influencing larger society, rather than escaping from it.

Kunze (2012) describes the most recent forms of intentional communities – particularly ecovillages and cohousing projects, but also kibbutzim, communes and others - as a postmodern reinvention of community. Whilst they have the characteristics of intentional communities described above, these younger forms are also directly responding to modern issues such as globalisation, individualisation (Kunze 2012), and in the case of ecovillages and a growing number of cohousing projects, environmental degradation and unsustainable resource consumption (Lockyer 2010; Sherry & Ormsby 2016). It is this idea that intentional communities are testing grounds for new communal structures, new aspirational ideologies and new modes of everyday living that makes them such fertile areas for research (Kunze 2012). Predominantly initiated by community and driven by social and ideological needs, they represent excellent examples of grassroots innovations. Boyer (2015) describes ecovillages for instance, as a grassroots movement creating alternatives to the

mainstream urban development regime, creating niche space for 'alternative construction, social governance, and resource management practices' (p.324).

2.5.1 *Intentional Communities with ecological principles*

The Fellowship for Intentional Communities directory, which does not claim to be exhaustive, lists over 1,375 individual communities (FIC 2017). Meijering, Huigen & Van Hoven (2007) conducted research on over 1000 intentional communities in Europe, North America and Oceania, of which 496 completed a survey, developing typologies that described intentional communities as either religious, ecological, communal, or practical communities (summarised in Table 2.6)

Table 2-6: Characteristics of the four types of community by the degree of withdrawal based on locational, ideological, economic and social factors. Ordered from most withdrawn (religious) to least (practical) (Meijering, Huigen & Van Hoven 2007).

Type	Locational	Ideological	Economic	Social
Religious	Various	Religious	Basic facilities	Communal activities, community contacts
Ecological	Rural – remote	Ecology	Self-sufficiency	Social contacts outside
Communal	Rural – village	Communal	Facilities	Community contacts
Practical	(Sub) urban	None	Services & work outside	Media

Within this typology, communities labelled as ecovillages or cohousing projects would generally fall into the categories of ecological community and practical community, respectively. Meijering et al (2007) describes ecological communities as those trying to create sustainable lifestyles, which is of particular interest to scholars exploring the sustainability of household consumption. However, these communities are most commonly rural. Urban cohousing communities are generally classified as practical (and maybe communal) typologies described by Meijering et al (2007). Recent scholarship has highlighted that many cohousing communities also place great emphasis on living sustainably, both ecologically and socially (Lockyer 2010; Meltzer 2005). The number of (sub) urban cohousing communities with sustainability-based ideologies is on the rise. They represent a type of community seeking to combine ecological living and extensive engagement with mainstream society that doesn't fit neatly within these categories. It is these groups of intentional communities that focus on ecological and socially sustainable living that are of interest in this doctoral research. They provide rich, complex examples of innovations in everyday consumption practices at the grassroots level.

Ecovillages

Ecovillages are communities consciously seeking environmental sustainability, along with social justice, equality and peace (Metcalf 2004). The term ecovillage was popularised in the early 1990s

and refers to the combination of community building with ecological design principles (Gilman 1991). The Global Ecovillage Network website defined an ecovillage as: "an intentional or traditional community using local participatory processes to holistically integrate ecological, economic, social, and cultural dimensions of sustainability in order to regenerate social and natural environments"(GEN 2015). GEN lists three core practices shared by most ecovillages:

- *Using local participatory processes,*
- *Integrating social, cultural, economic and ecological dimensions in a whole systems approach to sustainability*
- *Actively regenerating natural and social environment (GEN 2017b).*

Summing up various definitions, Boyer (2015) concludes that 'all agree that ecovillages are permanent human settlements, with an ideological commitment to modelling positive solutions to global environmental crises' (p.324). Whilst generally associated with rural and remote locations, they are described as being different to back-to-nature style communities of the 1960s and 1970s in that they attempt to create living alternatives to society, rather than just 'dropping out', and are engaged in a critique of modern materialist culture (Kunze 2012).

The ecovillage movement consists of a very diverse collection of communities, people and ideas (including intentional communities of the global north and traditional villages of the global south). This typology seeks to adopt an alternative economic stance, to 'reduce the necessity of economic relations with society, for example by reducing the use of consumer goods, by limiting work in paid jobs outside the community, and by aiming for economic self-sufficiency, chiefly by producing food and energy' (Meijering, Huigen & Van Hoven 2007, p.45).

The Global Ecovillage Network's project database lists over 900 ecovillages, from over 110 countries globally (GEN 2017a), including 42 in Australia. However, the database relies on self-reporting and self-identification of communities as ecovillages, and often includes communities in the formation phase, so only provides indicative information. Meijering et al (2007) received survey responses from 115 communities from Europe, North America and Oceania, which were classified as ecological communities, and the reported 50% survey response suggests that they identified 200-300 ecological communities in their research. Kunze & Avelino (2015) suggest the global number could range from 400 – 15,000, depending on the definition used. Litfin (2012) provides a reasonable summation of the scope, describing the ecovillage movement as relatively small, with several hundred ecovillages in industrialised countries, and a network of approximately 15,000 traditional villages introducing ecovillage principles in the developing world. Whilst small, the movement is described as a 'burgeoning phenomenon' (Ergas 2010), and the main organising body, GEN, has

received significant institutional recognition, being given consultative status with the UN Economic and Social Council (Kunze & Avelino 2015).

Cohousing

Cohousing is the other commonly discussed form of intentional community. It is a broader term than ecovillage, that generally refers to an urban form of intentional community (Metcalf 2012). The definition provided by the Cohousing Association of the United States, however: 'a type of intentional, collaborative housing in which residents actively participate in the design and operation of their neighborhoods' does not restrict it to urban forms (CAUS 2014). The modern form of cohousing evolved out of Northern Europe in the 1960-70's and has been adopted to varying extents globally. It focuses on creating more communal living spaces in order to increase social interaction and more recently, address issues of unsustainability (Williams 2005b). Six principles are commonly described as the defining attributes of cohousing, for example in the widely cited cohousing manual by McCamant & Durrett (2011). These principles are: participatory process involving residents in planning and design; explicit design features to encourage community interaction; extensive common facilities to supplement private living areas; resident management; non-hierarchical structure; and no shared economy (McCamant & Durrett 2011).

Chiodelli and Baglione (2013) undertook a grounded, and critical, study of cohousing literature and identified five characteristics, similar but not identical to those above, that they describe as necessary and sufficient to define a cohousing development:

1. communitarian multi-functionality – the coexistence of both communal and private space
2. constitutional and operational rules of a private nature – defined by the residents specific to the particular visions of the community
3. residents' participation and self-organization – exact extent can vary, but there is significant resident involvement in both formation and operation phases of community life
4. residents' self-selection - often prior to the physical realisation of the settlement and through informal processes
5. value characterisation – the community is formed based on certain shared aims and values (Chiodelli & Baglione 2013).

The fifth point highlights the importance of shared values for cohousing but leaves open what those values could be. The most common values are described as solidarity, inclusion, social activism and mutual support (Sargisson 2000, cited in Chiodelli & Baglione, 2013). While they are not intrinsically linked to sustainability, unlike ecovillages, many cohousing communities emphasise environmental sustainability as a shared value, one often explicitly stated and enacted through vision statements and everyday community operations (Fromm 2000; Lockyer 2010; Marckmann, Gram-Hanssen & Christensen 2012; Meltzer 2005; Williams 2005b). Meltzer (2005) conducted research on twelve

cohousing communities, finding that half had a formally developed mission or value statement. In every case these made explicit reference to living in a caring, pro-active relationship with the environment.

In summary, cohousing can be seen as a formalised attempt to create a sense of community and social belonging through a design that emphasises shared space and social interaction, using a process that gives residents greater say in the design and ongoing governance of their home and community.

Cohousing is an established model in many regions around the world, particularly in northern Europe. The current form of cohousing is said to have originated in Denmark, which is where it is most widespread (McCamant & Durrett 2011). Estimates vary markedly, and suggest between 1% (Tummers 2015; Vestbro & Horelli 2012) and 5% of the population of Denmark live in cohousing (Williams 2005b). In the Netherlands, cohousing is also thought to make up roughly 1% of apartment stock. This falls to about 0.05 per cent in Sweden (Vestbro & Horelli 2012). Chiodelli & Baglione (2013) provide an overview of cohousing communities in various countries in North America and Western Europe, highlighting that in absolute terms it is a very limited phenomenon. They note that the estimated 6000-7000 residents in cohousing communities in the USA equates to 0.002% of the population. While this is still a small movement, cohousing communities, along with ecovillages, have been described as the main growth areas in communal living (Metcalf 2001). Cohousing is still a niche idea in Australia, and there are currently only a small number of established cohousing communities, with the Cohousing Australia website listing 14 existing cohousing communities. Research by the Institute for Sustainable Futures at UTS identified 9 established cohousing projects, another 3 currently under-development and a few more in active formation stages (Riedy et al. 2017). This only equates to approximately 0.001% of the population. It is a currently active area, however, with 10 currently forming and 8 proposed cohousing communities' listed (Cohousing Australia 2015).

Ecovillages and cohousing comparison

There is considerable overlap between environmentally motivated cohousing communities and ecovillages. As types of intentional communities, both explore new ways of living with other people, based on commonly determined aims and values. Both emphasise participatory processes in design and planning and resident involvement in ongoing management. They also encourage greater communal sharing of space and resources. The definition of an ecovillage is broad and could be considered to encompass many cohousing communities with pro-environmental values. On the other hand, Marckmann and Gram-Hanssen (2012) suggest ecovillages, especially those with communal facilities, could be considered a subset of cohousing communities that has a greater focus on sustainable living. In an Australian context, the term ecovillage is traditionally seen as a

rural form of intentional communities, whilst cohousing is an urban form (Metcalf 2012). Meltzer (2010) explored the similarities and differences between ecovillages and cohousing. The main points of difference are summarised in Table 2-7. Based on the existing examples in Australia, cohousing communities are often smaller than suggested in Table 2-7, with sizes more commonly ranging from 20 – 40 people. Even smaller-scale cohousing developments consisting of only several households are also discussed (Mcgee & Wynne 2015).

Table 2-7: Comparison between ecovillages and cohousing – adapted from Meltzer (2010)

	Ecovillages	Cohousing
Location	Rural	Urban
Size and composition	Large (150 – 500 people) and heterogeneous (or aspiring to be)	Smaller (50-100 people) and more homogeneous
Ideological approach	Innovative and aspirational	Pragmatic and realistic
Relationship to the mainstream	On the periphery of mainstream society	Embedded within mainstream society
Focus	Environmental	Social
Environmental stance	More explicitly 'green'	More implicitly 'green'

As stated previously, whilst the general conception of cohousing does not have an explicit focus on environmental sustainability, there are a significant number of cohousing projects with explicit pro-environmental aims. It is common to find that intentional communities with goals of reducing environmental impacts refer to themselves as cohousing communities or ecovillages, and so these communities (henceforth referred to as intentionally sustainable communities) have become the focus for this research project.

2.5.2 Review of cohousing and ecovillage research

Wagner (2012) conducted a broad review of academic literature of ecovillages, broadly defined as communities with an explicit focus on ecological and social sustainability, and therefore including cohousing research. This focused on publications since 2000 as ecovillages achieved greater prominence in the 1990's. Research regarding intentional communities prior to this date was described as focused on the social aspects of community (Wagner 2012) (p.82), particularly: group formation and cohesion (Kanter 1972), identify creation, collective decision making, and recruitment, socialisation and commitment in communities (Metcalf 1986).

Wagner found 59 studies focused on communities with an ecological and social sustainability focus. The majority of these (49) took a social science or humanities approach, with 10 taking a natural science approach.

The methodological focus was largely qualitative and utilised case study analysis. Over half were case studies of only one community. The quantitative exceptions included two larger surveys, as well as quantitative studies of energy consumption, ecological footprint and quality of life. Details of the research focuses are shown in Table 2-8.

Geographically, most studies focused on communities in Europe and North America, followed by New Zealand, Australia and South Africa.

Table 2-8: Overview of academic research regarding ecovillages

Academic discipline	Thematic concerns	Focus
Social sciences and humanities	Examination of the perspectives of individuals	Motivation to join a community Effects of living in an ecovillage (e.g. well-being / quality of life, sense of belonging, human / nature relationship) Construction of identity, and Personality development (Bohill 2010; Fischetti 2008; Kirby 2003; Mulder, Costanza & Erickson 2006; Simon, Alexa Matovelle, et al. 2004)
	Sociological investigations	Sociological phenomenon of 'the community': concerned with typology and categorisation, systematic descriptions and the formation, evolution and dissolution of communities (Kirby 2003; Meijering, van Hoven & Huigen 2007; Meijering, Huigen & Van Hoven 2007) Organisational investigations of communities: Looking at structure and functionality, decision-making, and admission and integration processes (Kunze 2012). Traditional sociological concerns - Balance between individual and the collective, the reconstruction of values, group norms and underlying worldviews Sociological evaluations (largely interpretive) (Ergas 2010; Irrgang 2005; Kirby 2003; Kunze 2012; Mulder, Costanza & Erickson 2006) Ecovillages as models to be transferred to other social contexts or to urban spaces. Interactions with and impacts on surrounding regions (Meijering, van Hoven & Huigen 2007)
	Ethnological and cultural investigations	Cultural descriptions (Chitewere 2006; Meltzer 2005; Sanguinetti 2012) and examinations of the societal positions of ecovillages (as utopian places or manifestations of counterculture) (Bohill 2010; Fischetti 2008; Lockyer 2007; Meijering, van Hoven & Huigen 2007)

	Architectural and city planning	Embedded within mainstream society
Natural sciences	Ecological sustainability	Energy consumption and supply (Brown 2004) Ecological footprints (Bissolotti, Santiago & Oliveira 2006; Simon, A Matovelle, et al. 2004; S Tinsley & George 2006) Self-sufficiency

Tummers (2016) conducted a review of cohousing research, encompassing approximately 50 papers. This also noted the prevalence of case study research and highlighted a need for further systematic and quantitative studies. This review identified 5 thematic clusters:

- Advocacy, guides and case studies: Empirical studies and publications by the residents and/or advisors of the projects themselves.
- Changing lifestyles – accommodating the everyday: addresses demographic change, associating co-housing with moving away from traditional family structures, the emancipation of women and the ageing population of Europe.
- Architecture and designing community: Architectural focus on the either design criteria for social cohesion or design processes to emphasise participation
- Neighbourhood development – island or oasis: Strategies for urban development and neighbourhood regeneration
- Emerging themes – financial and legal aspects:

Most studies come from the Nordic, Anglo or German-speaking countries, with recent contributions from France.

Research adopting a social practice theory approach - described by Geels et al (2015) as an exemplary approach for understanding sustainable consumption – has been limited. Some research has applied social practice theory to examine particular practices within intentional communities (Pickerill 2015; Schelly 2016; Schröder 2013; Strengers & Maller 2011). Pickerill (2015) adopted a practice theory approach to consider the bathing practices of British Eco-homes. Schroder (2013) explored consumption practices in a number of 'environmentally-conscious' households, which included members of a British cohousing community. Existing research has highlighted the usefulness of social practice theory as an approach, and called for further work in this area. Pickerill (2012), in particular, identified a need for greater attempts to connect scholarship on habits and approaches to sustainable consumption (citing theories of social practice as a key approach) with debates about cohousing and ecovillages.

2.5.3 Sustainability claims for cohousing and ecovillages

Up to this point, ecovillages and cohousing communities (that are based on sustainability principles) have been introduced as a specific type of intentional community that represents a grassroots niche response to the increasing individualisation and commensurate loss of community in modern society, along with increasing environmental degradation and unsustainable-consumption of natural resources.

This section will consider the literature on environmental sustainability in these types of communities. Sustainability can have many meanings. The Global Ecovillage Network takes a holistic view by considering four dimensions of sustainability; social, culture, ecology and economy (Joubert 2017). Whilst it is impossible to consider any dimension in isolation, this research has been oriented around the ecological dimensions of sustainability, the environmental impacts of unsustainable patterns of consumption, whilst remaining cognisant of the interplay between all dimensions.

Kunze (2012), in her description of intentional communities as a postmodern reinvention of community, identifies three areas where intentional communities have shown the potential to transform the sustainability of living conditions in modern society. These are:

- Firstly, in terms of reducing ecological footprint whilst providing increased quality of life
- Secondly, as a grassroots social movement that is a crucial catalyst for a 'transformation to a sustainable world culture', by actively critiquing unsustainable aspects of the modern culture. They can be seen as a 'deliberate, organised, conscious effort by members of a society to construct a more satisfying culture' (Brown, 2002 cited by Kunze, 2012, p. 67). This critique is described as focusing on the 'predominant socio-cultural and political-economic structures' of Western society (Lockyer 2010), characterised by individualist and consumerist ideologies (Ergas 2010; Kirby 2003).
- Thirdly, as protected niches for experimentation, or 'living laboratories of communal and ecological living' (Kunze 2012, p.67). The broad range of practices in which experimentation is occurring ranges across community management, local scale economies and alternative monetary systems, eco-housing techniques, restructuring cultural norms and social relationships, and creating new forms of household organization, education, and communication (Kunze 2012; Lockyer 2010)

Both ecovillages and cohousing communities are often discussed as models of living and consuming in a more sustainable manner (especially with reference to having a reduced environmental impact) when compared with similar mainstream communities (Assadourian 2008; FIC 2015; GEN 2015; Lietaert 2010; Marckmann, Gram-Hanssen & Christensen 2012; Metcalf 2012; Williams 2005b, 2008). For example, Litfin (2012), describes ecovillages as 'demonstrating that it is possible to substantially reduce material throughput while enhancing the quality of life' (p.139).

Claims about cohousing in the grey and popular literature can be bombastic, but while some may be overreaching³³, others have a strong basis. 'Ecovillagers record lowest ever ecological footprint results!' (Dawson 2007) from *Permaculture Magazine*, for example, refers to one of the most commonly cited studies that attempts to quantify the environmental impacts of intentional communities. The study measured the ecological footprint (a metric measuring the environmental impact, and hence environmental sustainability of consumption) of the residents of Findhorn Ecovillage (a thought leader of the global ecovillage movement), finding an average ecological footprint of 2.7 global hectares (gha)/person, half the national average of the United Kingdom (5.4 gha/person) (Stephen Tinsley & George 2006). This is a significant reduction in the environmental impact of consumption for the ecovillage residents, and potentially was one of the lowest ever measured in the development world. This is not unique: a similar scale reduction in footprint has been measured by other researchers in ecovillages in Hungary and the USA (Lánczi 2009; Moos et al. 2006).

Limited data is available from studies of ecovillages in Australia, and no ecological footprint research. Some research has found that energy consumption, total living costs, and material consumption per person within Australian communities is about half that of people in mainstream households (Metcalf, 2001).

However, only very few studies have tried to quantify issues of ecological sustainability. Wagner (2012) conducted a broad review of all academic literature of ecovillages and ecovillage related aspects of other intentional communities and identified only four studies that addressed issues of ecological sustainability through quantification of ecological footprints or energy consumption. Wagner also found that studies that directly compared ecovillage communities with other forms of habitation have been scarce. Other reviews of quantitative sustainability studies of intentional communities have made similar findings (Giratalla 2010; Moos et al. 2006). Wagner (2012) concluded his review by stating there was a clear deficit in the evaluation of ecovillages' performance.

Some researchers advise caution in describing cohousing communities (Chiodelli & Baglione 2013). They found that while some groups can be characterised by pro-environmental and social behaviours, others could be described more negatively as socially, ethnically and ideologically homogenous, and segregated physically and socially from their neighbours.

³³ For example, Ecovillages are part of 'the most promising and important movement in all of history', or their emergence is 'the most significant event of the 20th century' (Jackson 2004).

2.5.4 Factors influencing the ecological sustainability of intentional communities

Several studies have analysed or described the factors that contribute to, or are argued to contribute to, the benefits of cohousing and ecovillages in creating more sustainable consumption patterns. Building on a thorough summary by Marckmann, Gram-Hanssen & Christensen (2012), these can be described as:

- The adoption of sustainable technologies (Marckmann, Gram-Hanssen & Christensen 2012; McCamant & Durrett 2011; Meltzer 2005; Szaraz 2015)
- Smaller homes through efficient use of shared space (Marckmann, Gram-Hanssen & Christensen 2012; McCamant & Durrett 2011; Meltzer 2005; Szaraz 2015)
- Encouragement of pro-environmental practices amongst residents (Lietaert 2010; Marckmann, Gram-Hanssen & Christensen 2012; Meltzer 2005; Scheuer 2002; Szaraz 2015; Williams 2005b, 2008)
- Greater sharing of goods and resources (Dawson 2007; Lietaert 2010; Lockyer 2010; Marckmann, Gram-Hanssen & Christensen 2012; McCamant & Durrett 2011; Meltzer 2005; Scheuer 2002; Sherry & Ormsby 2016; Williams 2005b, 2008)
- Greater relative sustainability benefits for one and two-person households (Marckmann, Gram-Hanssen & Christensen 2012; Williams 2007)
- Promotion of post-modern worldviews and post-materialist values (Meltzer 2005; Metcalf 2001; Mulder, Costanza & Erickson 2006; Sherry & Ormsby 2016).

Adoption of sustainable technologies

The cohousing concept encourages active involvement in selecting and using sustainable technologies within the community. Firstly, future residents are involved in the planning and design of the community in which they are going to live. This means they are able to consider technologies that may reduce ongoing building operation costs, and/or otherwise align with personal values and preferences. Marckmann et al (2012) found that cohousing communities (which included ecovillages) were 'more motivated to and capable of installing and experimenting with technologies like solar power or composting toilets' (p.427) and that this was the clearest and most important advantage of cohousing. However, they noted a focus amongst communities on visible and attention-grabbing technologies such as solar power, rather than more inconspicuous, but equally important ones such as insulation.

Secondly, the community scale of organisation allows connections 'between housing, resource conservation, mutuality, and responsibility for sustainability, that are not readily accessible at the scale of individual dwelling' (Jarvis 2011). This organisation opens up the array of technological options available. Both Meltzer (2005) and Marckmann et al (2012) cite cohousing architect Bruce Coldham (1995), who believed that 'CoHousing's principle contribution to a sustainable society is that it offers another scale of social organisation – an intermediate scale between the single family

and the town or municipality – thereby expanding the palette of technologies that can be applied’ (here from Meltzer 2005, p.15).

Meltzer’s research described the sustainable technologies made available by community level social organisation, such as centralised heating, seasonal thermal storage, organic recycling and biomass processing, bio-intensive gardening, community supported agriculture, bio-shelters, on-site sewage disposal and carpooling / car-sharing (see Figure 2-3). However, he found that his cohousing case studies had not taken full advantage of the potential environmental benefits from the centralisation of infrastructure and mechanical services.

Williams (2005) notes that the implementation of environmental schemes can be made easier by the high level of social capital (see Ruiu 2016 for a number of definitions of social capital). Marckmann et al (2012) found that the social organisation of cohousing did enable residents to play an active role in choosing the technologies for their homes.

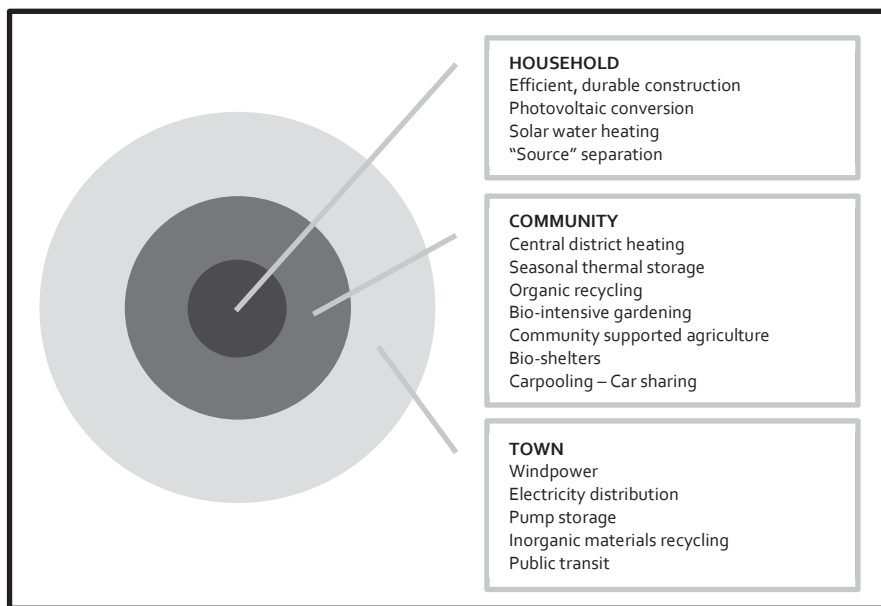


Figure 2-3: Scales of technological efficiency based on diagram by Bruce Coldham (Meltzer 2005)

Smaller homes and more efficient use of space

The general conception of communities based on cohousing principles of sharing communal space is that they allow higher densities of housing (which is generally seen as more environmentally beneficial), and encourage smaller individual dwellings (Marckmann, Gram-Hansen & Christensen 2012; Meltzer 2005). There are a number of aspects to this argument. Meltzer argues that a higher density of housing can be achieved (tolerated) in cohousing communities due to the social connections among residents. Households in cohousing communities are generally expected to be closer together (to facilitate social contact through walkability), and smaller (because rooms such as guest rooms, hobby rooms and laundries are shared) (Meltzer 2005; Williams 2008). Meltzer

(2005) found a ratio of common to private space of somewhere between 0.13 – 0.17 was optimal for functionality amongst communities he visited.

Smaller households can generally be expected to require fewer resources to build, and consume less energy (smaller spaces for cooling or heating) (Marckmann, Gram-Hanssen & Christensen 2012). Clustered housing also aims to increase the amount of land that can be kept as open space (Meltzer 2005).

Meltzer (2005) compared the density of cohousing and ecovillage communities to conventional suburbs in his research by calculating the Net Person Density (NPD) or persons per hectare of developed land. The study found the NPD in a conventional Australian or US suburb was approximately 30 pp/ha, whilst the NPD of suburban cohousing¹⁴ averaged 64 pp/ha (with a range from 50 – 117 pp/ha). The density analysis found that developments adhering to cohousing principles by clustering buildings and limiting vehicle access to the perimeters had 'vastly improved land-use efficiency' (p119).

Meltzer (2005) also analysed average dwelling size and confirmed his hypothesis that it was smaller for cohousing residents. The study found that in the United States, a cohousing dwelling is on average half the size of an equivalent age home. The average cohousing dwelling had a floor area of 100 m² (with a range from 79 m² to 127 m²), whereas a typical US family home built in 1993 was 202 m². The study also found that 70% of residents had previously lived in detached homes, but that once living in a cohousing community 84% lived in attached dwellings; an indication that cohousing residents were changing housing type when moving into a cohousing community. Meltzer (2005) described the key contributors to this as the common, shared facilities such as laundries, home offices and guest rooms that meant these were not required in individual dwellings. By comparison, empirical research by Williams (2003) found average space savings of 31% for residents living in UK cohousing.

Drawing on their research in Denmark, Marckmann et al (2012) cautioned that whilst smaller dwellings may be implicitly encouraged; they cannot be taken as intrinsic to the cohousing format. They noted local cultural ideals encouraged larger house design (increasing house sizes are common however in other developed economies such as Australia), and also that each household's share of the common spaces must also be considered when calculating average dwelling size.

Encouraging pro-environmental behaviour of residents

A key factor influencing sustainability within these communities is the social structure that facilitates and encourages pro-environmental everyday practices of residents, such as recycling and

¹⁴ The very rural and very urban outliers were removed from the calculation

waste sorting, sustainable consumerism, using clotheslines rather than dryers, water conservation. Marckmann et al (2012) describe these as every bit as significant as the physical and technical design of a community with regards to environmental impacts.

The ecologically sustainable intentional communities under discussion generally have community-generated, agreed upon principles based on living in an environmentally responsible manner. Strong pro-environmental principles serve to continually reinforce residents (often pre-existing) motivations and commitment to sustainable practices (Marckmann, Gram-Hanssen & Christensen 2012; Williams 2005b, 2008). This is an important impact, as a number of studies have shown that while many people seek to live a more sustainable lifestyle, only a much smaller proportion actually act upon these stated ideals (Munasinghe et al. 2009). Cohousing may help people to realise their own ideals in practice, by changing the cultural context in which practices are performed, or in other words, by changing the social norms (Munasinghe et al. 2009). Meltzer (2005) stated that interpersonal influence and exchange are key to this process.

Influence describes the manner in which cohousing residents with particular expertise are able to expose other residents to lesser-known sustainable consumption practices. Meltzer (2005) cites examples such as energy and water conservation, green consumerism and ideas of voluntary simplicity. This influence can occur through formal pathways such as holding educational workshops or showing the leadership to establish certain practices, or through more casual discussions.

Exchange refers to the more equal everyday exchange of knowledge and ideas amongst residents, and the opportunity for learning-by-doing in everyday routines. Marckmann et al (2012) found that members of established communities found it possible to challenge the behaviours of others due to sustainability concerns, therefore making it easier to 'realize pro-environmental behaviours in a community setting' (p.426).

Some researchers question the significance of pro-environmental behaviour changes among cohousing and ecovillage members because the groups are self-selecting and most residents already undertake practices of a pro-environmental nature prior to joining (Marckmann, Gram-Hanssen & Christensen 2012). Meltzer (2005) agrees that this is true for the founders of projects, but found that the majority of residents joined for 'quite pragmatic or even self-serving reasons' (p.135). These members can become associated with the values of the group, and the 'underlying effect of community life on their environmental awareness and pro-environmental practices is likely to be significant, if not profound' (Meltzer 2005, p.135).

Environmentally responsible behaviour is generally considered to increase for people living in a cohousing setting, with the social support, stimulus and systems creating an environment for even

greater sustainability (Meltzer 2005; Scheuer 2002). One finding of note from Meltzer's (2005) research was that pro-environmental behaviours continued to improve the longer they spent in a cohousing community. As summarised in Figure 2-4, he found consistent overall improvements in toxicity reduction, water conservation, energy conservation and waste reduction behaviours the longer someone lived in the communities.

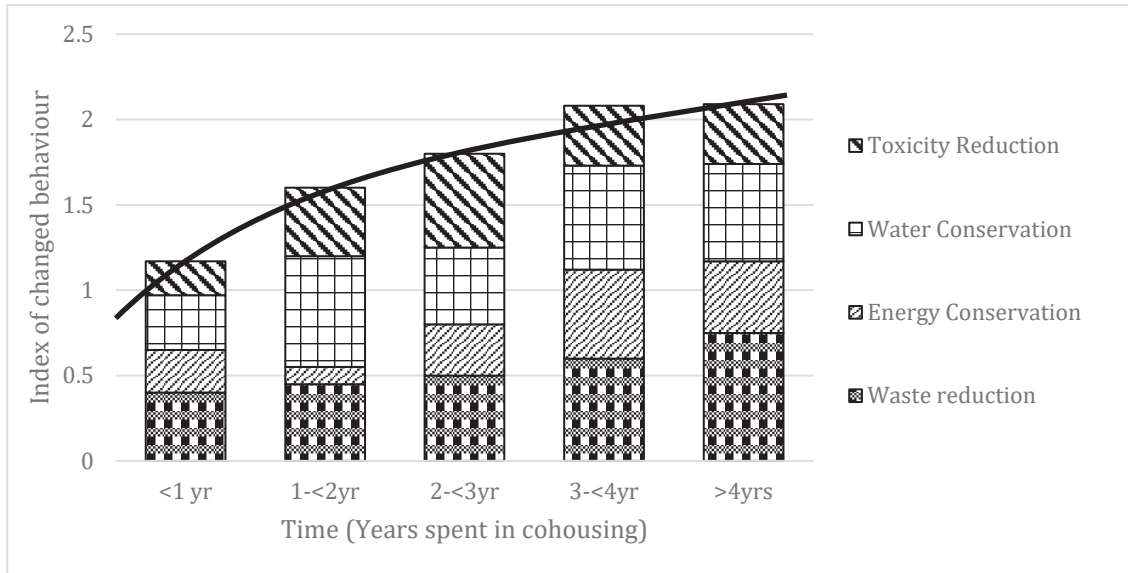


Figure 2-4: Recreation of Meltzer's findings of progressive change in pro-environmental behaviour over time (Meltzer 2005)

Sharing of goods and resources

The other sustainable consumption practice that is commonly highlighted by researchers is the sharing of goods, resources, and space (Dawson 2007; Lietaert 2010; Lockyer 2010; Marckmann, Gram-Hanssen & Christensen 2012; McCamant & Durrett 2011; Meltzer 2005; Scheuer 2002; Sherry & Ormsby 2016; Williams 2005b, 2008). Close physical proximity and the strong social capital, both common features of cohousing, promote and facilitate the establishment of systems of sharing amongst residents. The reduction of household consumption through sharing is described as 'cohousing lore' (Meltzer 2005). This has positive environmental benefits, reducing the energy and raw materials required for manufacture and delivery. Examples include car-pooling as well as sharing kitchen appliances, laundry spaces and equipment.

Researchers of communities describe two systems of sharing (Meltzer 2005; Sherry & Ormsby 2016): the formal sharing of community owned spaces and facilities, and the informal sharing of private possessions. Meltzer's (2005) research found that ownership of washing machines, clothes dryers and freezers was 25% lower amongst cohousing residents. Other commonly shared items were DIY and gardening tools, and lawn mowers.

Environmental advantages for one and two person households

Another factor related to the sharing of goods and resources emphasised by Marckmann et al (2012) is the relatively greater potential environmental benefits of living in cohousing for one and two person households. Research has shown that larger households are generally more resource efficient (Gram-Hanssen et al., 2009; Williams, 2007). Demographic trends indicate however that the proportion of one and two person households is increasing in Australia (Australian Bureau of Statistics 2008) and other developed nations (Gram-Hanssen 2009). In an attempt to determine the likely significance of this factor, Marckmann et al (2012) found one- and two-person households were underrepresented in their case studies, but speculated that urban cohousing would be likely to attract a greater number of smaller households than more rural communities.

Support for post-modern worldviews and post-materialist values

A number of authors link the beneficial environmental impacts of intentional communities to the support of sustainability-oriented value systems that emphasise improving quality of life rather than simply increasing economic prosperity (Lockyer 2010; Meltzer 2005; Metcalf 2001; Mulder, Costanza & Erickson 2006; Sherry & Ormsby 2016). Meltzer (2005) described the consumerist imperative, 'endemic in the West' as being substantially moderated throughout studied cohousing communities.

Within the ecovillage movement, there is a common belief that 'the current Western lifestyle of exaggerated consumption and social inequity is unsustainable and unjust on a global scale' (Jackson 2004, p.26), and many communities are explicitly seeking to create more just and sustainable lifestyles.

Informal and anecdotal evidence from ecovillages suggest that well-being is at least on par with national averages within intentional communities, even as they reduce environmental footprints (Joubert & Alfred 2007). Litfin (2012) describes ecovillages in affluent countries as seeking to 'reinvigorate social life and decrease material consumption' as conscious responses to socio-ecological realities (p.136). Although formal studies exploring well-being in intentional communities are limited, one study found residents enjoyed a similar quality of life with much reduced levels of consumption by strengthening the community's social capital. This study suggested that the conversion of private goods into public, shared goods had an impact in reducing the amount of built capital required by community members (Mulder, Constanza & Erickson 2006). A larger and more recent survey supported these findings, reporting that members of intentional communities scored highly for reported life satisfaction, among other measures (Grinde et al. 2017). They link these findings to literature that indicates that close-knit communities provide social connectedness and meaning and that these promote well-being. Meltzer (2005) highlighted the influence of interpersonal relationships on sustainability, finding that 'sharing and support are dimensions of

their social relationships that cohousing members said had significantly enhanced their pro-environmental practices' (p.137).

Metcalf (2001) compared research that found Australian communalists (residents of intentional communities) had material consumption levels and total living costs half that of ordinary Australian non-communalists. Indicative of post-materialist / voluntary simplicity mindsets, it also found that three-quarters of Australian communalists did not want to consume more, whilst two-thirds of non-communalists felt they did not have enough. Sherry & Ormsby (2016) sum up this concept as members of intentional communities generally 'replacing consumption with community' (p.151).

2.6 Implications for research: Intentional communities as niche sites of sustainable consumption

The sustainability transitions research agenda, and grassroots innovations in particular, emphasise the role that innovative niches can perform in a successful transition. The grassroots innovations research agenda has called, amongst other things, for research which learns from the diversity of innovations, sustainable practices and alternative means of provision within the grassroots and that, when combined with policy, can embed this social learning into the mainstream (Seyfang & Smith, 2007 p.599).

The previous section argued that intentional communities based on ecological sustainability principles represent rich and complex examples of innovations in sustainable everyday consumption practices at the grassroots level. They allow experiments in alternative ways of living to be practiced and contain a diversity of innovations and sustainable practices that may (or may not) be usefully transferred to mainstream systems. They are a promising grassroots niche in which to explore attempts to embrace sustainable consumption for a number of reasons:

- Ecovillages and cohousing communities are sites where people are making radical changes to their lifestyles to live in more sustainable manners, achieving impressive ecological footprint results (e.g. Tinsley and George (2006)).
- The goals of ecovillages and cohousing communities have many synergies with the New Economics conceptions of sustainable consumption, and the need for new conceptions of prosperity and well-being.
- Ecovillages and cohousing communities are involved in all kinds of direct and indirect acts of consumption. They are sites where all three of the environmentally significant consumption clusters identified by Spangenberg & Lorek (2002) can be influenced, along with the consumption of manufactured goods identified by Hertwich & Peters (2009) as significant in wealthier nations.

- They combine aspects of both social and technical aspects of innovation. Seyfang (2009) for example, highlights the importance of considering social innovations within the transitions literature. The cohousing model, which is essentially a social innovation based around sharing more goods, spaces and resources within a community, is an example. As has been discussed, innovations in social organisation create conditions that allow for the implementation of more sustainable technologies than individual households – indicating the link between social innovations and diffusion of technology.

2.6.1 *Current research gaps and opportunities*

The previous section (2.5) explored the current limits of research into approaches to environmental sustainability within intentional communities, with a particular focus on research in Australia. This revealed some key gaps and opportunities in the literature, which have been identified as a starting point for this doctoral research. These gaps are briefly summarised below, and the relevant research opportunities introduced.

Wagner (2012) conducted a broad review of academic literature of ecovillages and other related intentional communities, concluding there was a 'clear deficit in the evaluation of ecovillages' performance and their relevance to other social contexts' (p.89). A number of studies have evaluated how intentional communities achieve, or strive to achieve, their ecological sustainability goals (see, for example, Boyer 2013; Ergas 2010; Irrgang 2005; Kunze 2012; Lockyer 2010; Marckmann, Gram-Hanssen & Christensen 2012; Meltzer 2005; Sherry 2014). Geographically, however, this research has focused predominantly on communities in North America and Western Europe (including the UK).

Australia has a long tradition of both the creation of intentional communities and research into these communities. Dr Bill Metcalf is an Australian-based international expert on communalism, who has visited ~120 intentional communities throughout the world. Though he covers aspects of environmentalism in his work, his research tends to the more cultural, sociological and historical perspectives (Metcalf 1995, 2004). Cooper (2016) focused on the development of social capital in two urban eco-communities, that whilst sharing similarities with cohousing were not 'intentional communities per se' (p.43).

Studies examining environmental sustainability in the context of Australian intentional communities have been more limited. Meltzer (2005), frequently cited in this literature review, included two Tasmanian cohousing communities (Cascade and Cohousing Cooperative) in his case studies. Miller & Bentley (2012) explored specific behavioural choices regarding sustainability at Currumbin Ecovillage, and Strengers and Maller (2011) interviewed residents of the same community about adaptive strategies for achieving thermal comfort. Berry (2012) discussed research on Lochiel Park, a sustainable development, or developer-led ecovillage.

The literature reviewed so far indicates the potential for a greater understanding of the sustainability innovations in household consumption within intentional communities such as ecovillages and cohousing. A number of areas emerge as fertile grounds for further research to add to the growing body of knowledge in this field. These are:

- Improvement to the evaluation of the measured environmental performance of intentional communities.
- Expand knowledge of grassroots innovations through considering new types of initiatives (intentionally sustainable communities) in new geographic contexts (Australia).
- Exploration of environmental sustainability innovations within the context of the Australian intentional community.
- Application of social practice theory to look at the varied innovations in everyday consumption that develop within the intentionally sustainable communities niche.
- Improved understanding of how an intentionally sustainable community could intervene to improve the sustainability of mainstream populations.

2.6.2 Research Objectives

These gaps in the current research suggest a number of broadly defined research objectives for this doctoral research project, which are briefly discussed below.

Improved evaluation of the measured environmental performance of intentional communities

This has been identified as an area where there exists a research deficit, where the quantitative research base is not always strong enough to support the qualitative claims. This research strengthens the evidence base for claims of environmental sustainability by undertaking a systematic review of academic and grey literature that quantifies the impacts of intentional communities, which is detailed in Chapter 5.

Explore intentionally sustainable communities as an innovative grassroots niche in the Australian context

Intentional communities are a promising, innovative niche for sustainable consumption, which has only recently begun to be explored as such by researchers (Kunze & Avelino 2015). There has been little research to date that looks at this as a grassroots niche in the Australian context, even though it is a well-established movement.

Explore sustainability in Australian intentional communities

As discussed above, there is a rich history of research regarding the intentional community movement in Australia. While environmental concerns are common in the movement, however, they have not received the research focus they merit. There is a significant research contribution to

be made by considering how members of Australian intentional communities enact everyday sustainability.

Use of social practice theory to explore sustainable consumption within intentionally sustainable communities

A number of scholars have described at length the appropriateness of social practice theory for studying the sustainability of consumption within everyday life (Halkier, Katz-Gerro & Martens 2011; Markard, Raven & Truffer 2012; Røpke 2009; Welch & Warde 2015). By placing practices as the central unit of analysis, the individual can be decentred, and the contextual factors that are so significant in shaping consumption patterns (captured in the elements of practice) come to the fore.

Similarly, within the field of grassroots innovations, scholars have described social practice theory as an extremely useful theoretical framework 'to inform our understanding of how grassroots innovations function, develop, and grow and what precisely is happening within niches of social practices' (Seyfang & Haxeltine, 2012, p.397).

Ecologically sustainable communities, therefore, present themselves as excellent cases for research taking a social practice theory approach. They represent grassroots initiatives where varied innovations in sustainable household consumption are being explored. As noted in Section 2.5.2, some research has started to use this approach (Pickerill 2012; Schelly 2016; Schröder 2013; Strengers & Maller 2011), whilst calling for continued study in this area. Pickerill (2012) suggests there is a need for scholarship on everyday consumption and sustainability behaviours to be connected to debates about eco-housing and ecovillages. Schröder (2013) recommended that research be extended to cover communities of sustainable practices, such as in-depth case studies that explored the 'implications of collective living and collaborative consumption on the conduct of 'sustainable' practices' (p.207).

Influence of intentionally sustainable communities on mainstream populations

A final suggestion that arises from this literature review is the need to consider the implications of insights from the alternative approaches to sustainable practices that exist within the grassroots, and investigate ways to spread useful social learning into mainstream populations (Schröder 2013; Seyfang & Smith 2007).

Consideration of these research areas suggests a research program that firstly seeks to increase the understanding of the measurable environmental impacts of intentional communities. This would be followed by an exploration of the practices associated with ecovillages and cohousing communities that can be described as 'sustainable', and the aspects of these communities that encourage the adoption of these practices. Finally, it suggests consideration of how these practices may spread (or may not spread) from the site of innovation into the wider community.

These research areas will be developed into specific research questions in Chapter 4. The next chapter will introduce social practice theory in greater detail and will discuss its impact as a theoretical framework for research into sustainable consumption in intentional communities.

Chapter 3. A social practice theoretical framework

The previous chapter argued (in Section 2.2.3) that creating sustainable consumption patterns will require a research and policy focus on 'the transformation of socio-technical systems and daily life practices in domains such as mobility, food, and energy provision and use' (Geels et al. 2015a, p.6). Intentionally sustainable communities, the focus of this research project, were introduced as examples of grassroots innovations where residents seek to create alternative socio-technical systems at a meso (household / neighbourhood) scale.

Social practice theory (SPT), briefly introduced in the previous chapters, has been described as the exemplary approach for understanding transitions in socio-technical systems and practices in order to reconfigure consumption patterns (Geels et al. 2015a). Rather than focusing on transitions in regimes and systems (as is the case with multi-level perspective), SPT focuses on transitions in practice (Shove, Pantzar & Watson 2012). It offers an alternative to mainstream conceptions of sustainable consumption, characterised by a focus on behaviour change theories that place the burden of responsibility for responding to environmental issues on individuals (Shove 2010). Instead, SPT focuses on actions at a social/communal level, making it well suited for understanding intentional communities.

Chapter 1 introduced the pragmatic epistemological stance that has been taken throughout this research and will be discussed further in Chapter 4. Pragmatism places the research focus on finding solutions to problems, i.e. unsustainable consumption patterns (Creswell 2003). Environmental pragmatism, the particular form adopted (see Dunlap (2010)) is open to any research approach that can provide insights regarding this problem; this includes empirical investigations that examine the complex interrelations between social phenomena and environmental conditions e.g. issues of unsustainable consumption patterns. SPT is a theoretical concept that sits comfortably within this epistemological framework.

Rather than conceiving of technologies and behaviours as separate, in SPT they are viewed as 'intertwined and embedded within social practices' (Macrorie, Foulds & Hargreaves 2014, p.96). SPT emphasises the ongoing interdependence between everyday habits and actions, and the broader structures of socio-technical institutions and systems of provisions (Hargreaves 2011; Spaargaren & Van Vliet 2000). Consumption is conceived of as mundane in nature, as part of everyday habit, routine, or practice that arises from this interdependence (Halkier, Katz-Gerro & Martens 2011). This chapter provides the theoretical rationale that informs the research methodology to be discussed in Chapter 4 (Crotty 1998).

This chapter will examine the key concepts of SPT and how it can contribute to a greater understanding of the transition to sustainable consumption patterns. This chapter will discuss: the general understanding of social practice as composed of various elements (Section 3.1), the specific relevance of social practice theory for sustainable consumption research (Section 3.2), the dynamics of social practices (Section 3.3), and understandings of how practices can be governed to follow more sustainable paths, particularly focusing on how interventions in practice have been conceived (Section 3.4). Finally, it discusses the inter-relationships between practice theory and transitions theory, and how these are understood in this thesis (Section 3.5).

3.1 Understanding Social Practice Theory

Practice theory refers to a body of literature which places everyday practice as the central unit of analysis, but which is very heterogeneous (Bourdieu 1977, 1990; Giddens 1984; Middlemiss 2011; Reckwitz 2002; Schatzki 1996, 2002; Shove, Pantzar & Watson 2012; Warde 2005).

Giddens' structuration theory (1984) and the notion of habitus described by Bourdieu (1977) have been major influences on the development of the study of social practice. In his concept of habitus, Bourdieu captures both the productive and reproductive elements of daily life. He considers that the performance of a practice continually establishes the precedent for future practice whilst also following a pre-determined logic or precedent itself (Bourdieu 1977). Giddens (1984) posited that:

the basic domain of study of the social sciences... is neither the experience of the individual actor, nor the existence of any form of social totality, but social practices ordered across space and time (p.2)

As people go about their daily life, the flow of actions that are performed are not predetermined by the existing social structures, nor does every action represent a conscious decision by human actors (Shove, Pantzar & Watson 2012). Structuration describes how:

social systems, social rules, and economic and political resources both constrain and support everyday practices, enabling people to achieve the daunting feat of navigating daily routines but limiting their capacity to change the underlying systems, rules and resources (Kennedy, Cohen & Krogman 2015, p.8).

Spaargaren (2011) describes the key contribution of SPT as the understanding of:

social life as a series of recursive practices reproduced by knowledgeable and capable agents who are drawing upon sets of virtual rules and resources which are connected to situated social practices (p.815).

More recent advances in the theorising of social practices within social scientific enquiry were undertaken by the philosopher Theodore Schatzki (1996), and cultural sociologist Andreas Reckwitz (2002). Discussing the application of SPT by sustainable consumption scholars, Kennedy et al (2015) describe two 'generations': the early adopters who first joined SPT with the consumption field, particularly Warde (2005), Shove and colleagues (Shove & Pantzar 2005; Shove, Pantzar & Watson 2012) and Spaargaren (2003), and the second generation of 'practice-based' accounts which are more directly influenced by the early adopters than by foundational theorists (e.g. Bourdieu and Giddens). This application of SPT with consumption research will be discussed further below.

3.1.1 Elements of practice

The often cited definition of practices by Reckwitz (2002) describes a practice as:

a routinized type of behaviour which consists of several elements, interconnected to one another: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge. A practice – a way of cooking, of consuming, of working, of investigating, of taking care of oneself or of others, etc. – forms so to speak a 'block' whose existence necessarily depends on the existence and specific interconnectedness of these elements, and which cannot be reduced to any one of these single elements (Reckwitz 2002, p.249–50)

Key to this description is the concept of practices as comprised of interrelated elements. As described by Reckwitz (2002), several elements combine for the performance of a practice, and a practice cannot be performed unless all the required elements are present. Shove et al (2012, p.14) propose three types of interconnected elements: materials, competences and meanings (see Figure 3-1).

Whilst simplifying practices to a small number of interacting elements is a reductive take on the complexities of social life, it is a useful tool for enhancing understanding, and has been adopted in this research. Bringing the elements of practice into focus allows a better exploration of the dynamics of social practice (Shove, Pantzar & Watson 2012): the relations between the elements, what explains the apparent diffusion of practices; and how meanings, competences and materials circulate and potentially change (Shove & Pantzar 2005).

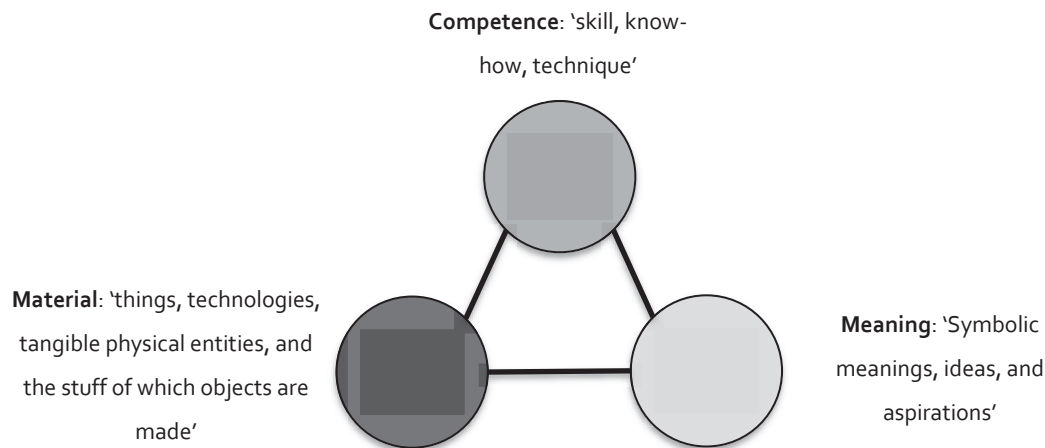


Figure 3-1: The elements of practice (modified from Shove et al. (2012))

3.1.2 Practice as performance and entity

Schatzki (1996) described two central notions of practice, summarised as practice-as-entity and practice-as-performance. The entity represents a certain pattern of elements generally recognisable as constituting a practice, whilst performance is the dynamic combining of those elements in the actual 'doing' of the practice. Reckwitz (2002) describes a practice as social because 'it is a 'type' of behaving and understanding that appear at different locales and at different points of time and is carried out by different body/minds' (p.250). Practices are both understandable to the agent performing the practice and to potential observers (Reckwitz 2002, p. 250)

Consider the example of the practice of showering. Whenever someone has a shower they combine the materials (water, electricity, soap, a dedicated shower space), meanings (cleanliness, freshness, relaxation) and competences (how to use soap and wash oneself, how to make oneself presentable for the day ahead) that make up the practice of showering. Each time this practice is performed in diverse settings, various combinations of materials, meanings and competences are brought together. The practice-entity of showering can be described as above; however, it is only through enacting this practice - as a performance - that the links between the elements of showering are reinforced or changed (Shove & Walker 2010).

Spurling et al (2013) explain the analytical distinction between these two notions by describing practices-as-performances as what might otherwise be referred to as 'behaviours', whilst the entity is the 'socially embedded underpinning of behaviour' (p.6). In this sense behaviours are observable actions that are only the 'tip of the iceberg' of the entire practice, where the entity has its own historical path that has led up to its current form. They argue that the entity thus represents a better target of sustainability policy interventions. This concept will be revisited in Section 3.4 below.

3.1.3 Using elements as an analytical frame

That concept of practices as comprised of various elements is well understood in the field, however different theorists apply slightly different descriptions to those elements. Gram-Hanssen (2011) provides a useful comparison of the different descriptions of the elements from key contributors to the field (e.g. Schatzki 2002; Warde 2005; Reckwitz 2002; Shove, Pantzar & Watson 2012), with the summary reproduced in Table 3-1.

Table 3-1: Key elements in the understandings of practice (Gram-Hanssen 2011)

Schatzki, 2002	Warde, 2005	Shove-Pantzar, 2005	Reckwitz, 2002a
Practical understanding	Understandings	Competences	Body Mind The agent Structure/Process Knowledge Discourse/Language
Rules	Procedures	Meanings	
Teleo-affective structures	Engagement	Products	Things
General understandings	Items of consumption		

The varied conceptions of practice elements underscore a couple of points. Firstly, Schatzki does not include a material element, and Warde is described as adding items of consumption only implicitly, whilst Shove & Pantzar (products, later to be called materials) and Reckwitz (things) explicitly include materials (Gram-Hanssen 2011). Shove et al (2012) explicitly draw on some of the material aspects of actor network theory (Latour 2005). Figure 3-1 illustrates Shove et al's (2012) model of the elements of practice which is adopted for this research. This model of elements was chosen as it is comprehensive (inclusion of a material element is significant for consumption research), yet simple enough to be useful. As Shove et al (2012) contend:

this simple formulation is useful in that it provides us with a means of conceptualizing stability and change, and does so in a way that allows us to recognize the recursive relation between practice-as-performance and practice-as-entity (p.15)

Shove et al (2012) use the term material to refer to 'things, technologies, tangible physical entities, and the stuff of which objects are made'. Intentional communities exist physically and require land on which to build, materials with which to construct houses, gardens and communal structures, as well as infrastructures or connections to provide water, electricity and other necessary items. The link to consumption of resources and environmental impact is clear when the material element of practice is examined. While all physical entities are grouped under material elements, Shove et al (2015) notes some categorical differences between 'infrastructures' and other forms of material, noting their obduracy, connectivity and collective nature. These concepts will be revisited later in the thesis.

Meanings refer to the symbolic meanings, ideas, and aspirations that guide the 'social and symbolic significance of participation [in a practice] at any one moment' (Shove, Pantzar & Watson 2012). Key meanings associated with intentionally sustainable communities relate to aspirations for the creation of alternative, more sustainable lifestyles, and often ideas of the benefits attributed to collaborative lifestyles and self-sufficiency. This research has conceived of explicit rules and principles as a form of meaning, considering them to be shared understandings that have been codified in some way. This is certainly the case when taking into account the community determined visions and by-laws of an intentional community. The treatment of explicit rules differs amongst scholars, so the most appropriate way to treat rules within an elemental conception of practices was the subject of some consideration in this research project before treating them as meanings. Both Schatzki and Warde designate rules or procedures as an element, referring to explicit rules, principles, instructions and laws. Shove and Pantzar, on the other hand, are described by Gram-Hanssen (2011) as simplifying the description of elements by not distinguishing between practical knowledge (know-how or non-verbal knowledge) and theoretical knowledge (explicit, rule-based) within the purview of competences (Shove & Pantzar 2005). Other scholars have used descriptions of practices that include an element equivalent to rules (e.g. Glover (2012), Strengers (2010), and Gram-Hanssen (2011)). Some position rules as an expert derived form of competence (e.g. (Gram-Hanssen 2011)) whilst others describe rules as 'strong shared meanings that certain segments of society have agreed to institutionalise' (Glover 2012, p.57).

The third element of practice is competence; the skills, know-how and techniques required to perform a practice (Shove, Pantzar & Watson 2012). Competence acts as a link between individual performance and wider social practices, the mind and the body, and past performances with future performances (Royston, Daly & Foulds 2014). The sustainable performance of everyday life invariably involves new ways of being and doing and hence ways that new forms of competence can be introduced into daily practice and recruit new carriers. In the literature it is recognised that knowledge takes different forms. The most common distinction is made between know-how, or practical knowledge and know-what / know-that, which is explicit, intellectual knowledge (Brown & Duguid 2001)¹⁵. Know-how, or practical competence is particularly significant for enacting practices, as there is a real difference between, for instance, intellectually understanding how to ride a bike and actually riding a bike. The 'doing' of a practice is born of first-hand, embodied experience and operates in a realm below discursive consciousness and reflexivity (Shove, Pantzar & Watson 2012).

Exploring the growth, circulation, transformation and demise of these elements of practice, rather than practices or behaviours, can offer new insights for facilitating sustainable consumption, and is explored in this research. A focus on the ways in which 'novel sustainable elements might be

¹⁵ Other types of knowledge could include 'know-why', 'know-who' or 'know-when' (Strengers 2015)

introduced or in which new and more sustainable configurations of elements might be generated' (Hargreaves, Longhurst & Seyfang 2013, p.406) is an important and developing area of social practice theory (Shove & Walker 2010).

3.1.4 Relationships between practices

The many-layered nature of practices is recognised within SPT. The multitude of interacting practices within the plenum of social life 'intersect, overlap and co-evolve in complexes and bundles' (Keller, Halkier & Wilska 2016). Bundles of practice are described as loose-knit patterns based on the co-location and co-existence of practices, whilst complexes represent stickier and more integrated combinations (Shove, Pantzar & Watson 2012). Just as practices can link together, bundles can connect into larger constellations, which are larger nexuses of practices and arrangements amongst the overall plenum of social life (Schatzki 2015). The plenum is the 'immense maze of interconnected practices and arrangements' (p.16) formed by linking of practices, and bundles and constellations (Schatzki 2015)

The concept of the 'domain' of practice is commonly used as a way of examining a bundle of practices (Kennedy et al. 2013). A domain of practice is described as encompassing practices that are reproduced within a shared 'regime' (Geels 2010), follow certain historical dynamics, and share sets of cultural understandings (Spaargaren 2011). Spaargaren (2011) suggests domains for the governance of sustainable consumption that share similarities to the sustainable consumption priority areas (Section 2.1.1) including: food, dwelling the house, being mobile, leisure and tourism.

Middlemiss (2011) applies the concept of 'lifestyle' (as used by Spaargaren (2003)) in an attempt to widen the field of practice study beyond 'one domain of practice at a time' (p.1161). Lifestyle is used to represent the group of practices that a person performs in their daily life, and the storytelling used to explain this set of practices.

3.2 Social practice theory and sustainable consumption

SPT has been applied to numerous disciplines, including environment and sustainability research (Halkier, Katz-Gerro & Martens 2011). With regards to sustainable consumption research it addresses the shortcomings of the mainstream approaches to changing consumption patterns (e.g. Shove (2010), which focused largely on individual behaviour change, shifting consumer choices and technological improvements. Key criticisms of these approaches were discussed in Section 2.2.1. Essentially, they have been grounded in 'positivistic, rationalistic, and quantifiable epistemologies' (Kennedy, Cohen & Krogman 2015, p.4). This mainstream approach has received increasing criticism as being over-individualistic, and not sufficiently cognisant of factors such as social relations, material infrastructure and context as intrinsic to social practices (Hargreaves 2011).

SPT responds to these shortcomings by offering a perspective that:

moves beyond individual behaviour on the one hand and its context on the other — whether material infrastructure or social norms—to a unit of analysis that integrates both behaviours and their material, social and cultural contexts (Spurling et al. 2013, p.19)

Kennedy et al (2015) summarise three key theoretical advances that SPT provides scholars of sustainable consumption. Firstly, it decentres the individual, enabling scholars to integrate the idea that consumption practices are rarely fully conscious (Kennedy, Cohen & Krogman 2015). Everyday practice is therefore the central unit of analysis, with individuals becoming 'carriers or hosts of a practice' (Shove, Pantzar, & Watson, 2012, p.7). SPT focuses on the 'collective development of modes of appropriate conduct in everyday life' (Warde, 2005, p.146). This means that individuals are:

involved in the reproduction of series of practices within designated fields of social life by drawing upon the specific sets of rules and resources constitutive for those practices' (Spaargaren 2011, p.815).

Individuals do not generally conceive of their actions as consumption, but rather as the performance of social activities, or practices, through which goods and services are consumed. For example, people more commonly think in terms of heating or cooling the house, rather than consuming gas or electricity. Rather than being a practice, consumption is 'primarily a process of appropriation for multifarious and often mundane use' that occurs in almost every practice (Warde 2014a, p.19)

Secondly, it highlights the environmental significance of the consumption associated with routine, everyday actions of daily life, whether they be showering, driving, cooking etc. This has been described as ordinary or inconspicuous consumption, as opposed to symbolic, communicative and conspicuous consumption (Hargreaves 2011; Kennedy, Cohen & Krogman 2015; Shove & Warde 2002; Spurling et al. 2013).

Finally, it offers a way of understanding social action as the recurrent and iterative relationship between habit and social context, where 'social practices create and are created by social context' (Kennedy, Cohen & Krogman 2015, p.11). This understanding opens up possibilities to potentially work around the 'value-action' gap, where pro-environmental values are not reflected in behaviours (Welch & Warde 2015).

Social practice theory therefore redefines the problems of unsustainable consumption, with consumption seen as a 'moment' in the multitude of practices of which everyday life is comprised, rather than an end in itself (Warde 2005). It focuses attention on practices that 'implicate people in environmentally damaging and inequitable ways of life' (Strengers & Maller 2015, p. 2), or

alternatively, practices associated with environmental and social benefits. In addition to the relevance of SPT to sustainable consumption research, community and grassroots innovation scholars have described SPT as an appropriate framework to use for in-depth analysis of sustainable grassroots socio-technical innovations (Middlemiss 2011; Seyfang & Smith 2007). Therefore, focusing on the practices that evolve and stabilise, or perhaps disappear, within intentionally sustainable communities, provides an appropriate approach for understanding the 'everyday' sustainable consumption implications of living in such a community.

3.2.1 *Application of social practice theory to sustainable consumption*

The application of SPT to studies in sustainable consumption has been discussed by numerous scholars (Halkier, Katz-Gerro & Martens 2011; Kennedy, Cohen & Krogman 2015; Røpke 2009; Spaargaren 2011; Welch & Warde 2015). Research related to household consumption covers a range of domains and practices, including: resource intensive practices (e.g. Shove 2003), thermal comfort (e.g. Gram-Hanssen 2010; Strengers & Maller 2011), low and zero carbon construction (e.g. Foulds 2013), energy demand management (e.g. Nicholls & Strengers 2014; Hargreaves, Nye & Burgess 2013), energy retrofits (e.g. Bartiaux et al. 2014), pro-environmental behaviour change (e.g. Hargreaves 2008, 2011), food consumption and production (e.g. Sahakian & Wilhite 2013; Brand 2010), mobility (e.g. Watson 2012; Kent & Dowling 2013), conscious lifestyle change in a community context (e.g. Middlemiss 2011) and large scale eco-developments (Jones 2013).

SPT based research focusing on intentional communities is limited, though some research has started to use this approach (Pickerill 2012; Schelly 2016; Schröder 2013; Strengers & Maller 2011). Strengers and Maller (2011) explored the cooling strategies developed by residents of an Australian eco-community without air-conditioning, highlighting the appropriateness of SPT for understanding adaptive approaches to thermal comfort. Schelly (2016) uses the concept of ethic to explore the practices of individuals who 'have reconfigured the practices of everyday life in ways that diverge from mainstream residential dwelling' (p.269) in case studies including intentional communities. She makes reference to SPT, describing her research focus as the domain of practice of residential dwelling and suggests that there are ways to restructure residential life to minimise environmental consequences. Schroder (2013) focused on the ~5-10% of people who claim to live in a more socially and environmentally sustainable manner, describing this group as having been

all but ignored in sociologies of practice in the context of sustainable consumption which considers this minority an insignificance and focuses almost exclusively on a 'mainstream' majority which more closely maps onto the stereotype of 'consumer society' (p.9).

Schroder (2013) recommended extending his research with in-depth case studies considering communities with a greater focus on collective and collaborative living (i.e. intentionally sustainable

communities) (p.207). Pickerill (2012) suggests there is a need for scholarship on everyday consumption and sustainability behaviours to be connected to debates about eco-housing and eco-communities. Pickerill (2017) has contributed to this scholarship, focusing particularly on individual eco-homes, and states that:

More work is required to understand to what extent eco-homes can reconfigure and reshape everyday social practices as part of the socio-technical assemblage of living with/in eco-homes (Pickerill 2017, p.3)

In particular, there is a need for a greater understanding of the 'interconnections, relations and contexts' that shape how sustainable homes are built and lived in (Pickerill 2017, p.3).

This research, by exploring the broader context of the entire intentionally sustainable community, including the modes of collective development and governance, can make a valuable contribution to this existing literature.

3.3 The spread and transformation of social practice

To understand how practices can become more sustainable requires a deep understanding of the dynamics of social practice. How do they circulate and spread, evolve and even transform?

3.3.1 Circulation of elements – spread of practices

With individuals considered carriers of practices, some scholars have come up with creative ways to describe the circulation of practices to new carriers. One, Hitchings (2012), has likened it to an infection. What, then, are the modes of transmission?

Shove et al (2012) view practices as structured and situated arrangements that are necessarily localised to the place and context of performance. Elements, on the other hand, are more stable and can travel between places and endure over time. In order to understand how practices spread then, it is necessary to consider the systematic ways in which the circulation of elements differs.

Access to the requisite material elements is always required in the performance of practice. Therefore the spreading of material requires the physical transportation of, changing access to, or co-location of, materials (Shove, Pantzar & Watson 2012). For instance, the practice of composting usually requires access to a compost bin. One household in the street with a bin does not allow every household to perform composting. For another house in the street to compost, they would need to obtain access to the bin (sharing with the original owner), take the bin to their house (transport the bin), or buy another bin for their house.

Competences and meanings circulate in different ways to materials. They are routinely modified when they travel; much more so than materials. Competences move through processes of

'abstraction, reversal [of abstraction], lateral migration and cross-practice creep' (Shove, Pantzar & Watson 2012, p.52). Knowledge becomes movable by being decontextualized from the local situation and packaged in a way that lets it move somewhere else, where it can be recontextualised in the new location (Deuten 2003, cited by Shove et al). Some kinds of know-how can only effectively spread to practitioners who are 'already prepared to receive it because of prior, first-hand, practice-based experience' (Shove, Pantzar & Watson 2012, p.49).

The circulation of meanings depends on processes of association and classification (to other meanings). For example, if kitchen gardening becomes linked to organic food, then meanings of health, wellbeing or environmentalism (commonly linked to organic food) may become associated with kitchen gardening practices. Shove et al (2012) contend that 'any one practitioner has limited first-hand experience of how a practice is reproduced by others' (p.55), therefore the extent of the circulation of meanings depends largely on infrastructures of communication and mediation, such as TV or the internet. This point, that mainstream community households have limited knowledge of how others practice many aspects of everyday life, particularly in the home, is relevant to later discussion about practice in intentionally sustainable communities.

Other aspects of the circulation of elements highlighted by Shove et al (2012) are that 'processes of codification and de-codification matter for the circulation of competence and meaning, but not for material' (p.56-57) and that 'acquiring new forms of skill often takes time' whereas 'meanings (i.e. forms of association) can change and emerge and can travel far and fast' (p.57).

These understandings of how practices spread and the types of processes involved with the circulation of the different elements will be useful in considering how practices circulate and evolve within, and away from intentionally sustainable communities.

3.3.2 How do practices change, and how can they become more sustainable?

As this research is concerned with understanding how unsustainable consumption practices can be changed, it is helpful to briefly review scholarship on how practices change.

Kennedy et al (2015, p. 11) reiterate the point that 'social practices create and are created by social context'. Social practices are performed based on the pre-determined precedent of that practice, whilst each performance also re-establishes the precedent that future practices will follow (Bourdieu 1977). Continuity in everyday practice occurs continuously through more or less faithful performances by practitioners (Shove & Pantzar 2005). Yet it is through the less faithful performances that change occurs. Every enactment of a practice is likely to change the elements used in that performance in some small way e.g. an incremental gain in competence, slight deterioration of the material (Shove, Pantzar & Watson 2012). As Sahakian and Wilhite note, 'how

we go about our daily lives has changed and continues to change over time, and in different localities' (2013). This understanding cautions that the ability of any actor to influence change in social practice is limited, as change processes tend to be gradual and evolutionary. Yet it is also cause for optimism that large-scale changes in social practices are not only possible, but can occur in relatively short periods of time (Geels et al. 2015a; Spurling et al. 2013).

Practice theory scholars have discussed a number of different change mechanisms to aid understanding of how practices change. Some of the general mechanisms described include:

- i. First, the elements comprising the practices change, either through the introduction of new elements or combining of existing elements in novel ways (Shove, Pantzar & Watson 2012; Watson 2012). The introduction of new technologies is an example of this (Gram-Hanssen 2008)
- ii. Second, the population of 'carriers' of a practice can change, defecting from one practice to another (Watson 2012).
- iii. Third, how one practice bundles together with others can change, impacting both the elements of practices and processes of recruitment. The elements of meaning, materiality and competence are themselves outcomes of practice, so changes to one practice can change the elemental outcomes, and have ripple effects into a much wider system of networked practices (Shove, Pantzar & Watson 2012; Watson 2012).

Shove et al (2012) highlight different spaces (e.g. homes, offices, community spaces, even cities) as having consequences for the distribution and development of individual practices. Different spaces permit 'distinctive conjunctions... favouring some but not other forms of association' (p.124). The co-location and interaction of practices in certain spaces can lead to 'cross-pollination', with novel, hybrid forms of practice emerging. In this way, spaces can be sites of innovations in practice, as can communities and networks. Communities and social networks are described as 'crucibles in which new arrangements are formed, as containers that limit their diffusion, as conduits through which they flow' (Shove, Pantzar & Watson 2012, p.66). As discussed in Section 2.5.3, intentional communities often place emphasis on shared and communal spaces that are integral parts of everyday life. This conception of communities is useful, and exploring how these spaces act as 'crucibles' will form part of this thesis.

These mechanisms for practices to change form the theoretical basis for discussions on the governance of practices towards specific goals, such as sustainability. This will be explored more in the next section.

3.4 Governing practice change

This research is ultimately concerned with making a contribution to improving the sustainability of household consumption patterns. Informing future policy actions is one important avenue to achieving this. Keller et al (2016) describe sustainable consumption policy from a social practice theory perspective as an attempt to shift the 'nexuses of activities towards lower carbon ways of life' (p.82). While questions are still raised about whether a faithful application of SPT can be usefully applied in policy-making (see (Shove 2015)), many scholars argue that there is still significant opportunity for SPT to 'inform and inspire' policy making. Given that practices are always changing, the idea that their 'trajectories of change' may be guided in a more sustainable direction makes sense (Spurling et al. 2013).

When seeking to guide practice trajectories, another question arises: How can we measure these changes, given there is so much diversity in practice performance. Does making everyday practice more sustainable mean changing the 'ideal type' entity for a certain practice, is it shifting the range and distribution of every performance of a given practice that occurs at any given time (Blue & Spurling 2014)? Is it striving to recruit 80% of a population as carriers and performers of a sustainable variant of a practice at the expense of others (and ignoring the 20%), or is it recruiting all individuals to perform a sustainable variant 80% of the time? Anderson (2015) draws on statistical concepts when thinking about practice, arguing that when thinking about processes of change we want to understand something about how the mode (or mean) practice performance changes, for whom, as well as how the heterogeneity of performance changes.

The reasons why SPT has increasingly been applied to the study of sustainable consumption were discussed in Section 3.2. The third point is particularly relevant when discussing changes in everyday practice. By providing an improved understanding of social action, SPT offers hope that processes of change can be better understood, and pro-environmental transitions potentially encouraged.

Critiques of SPT (e.g. Geels 2011), claim that the uses of the theory have tended to focus on stable socio-material phenomena and overlooked change processes, such as ways of introducing new sustainable elements, or generating alternative, sustainable, configurations of elements (Hargreaves, Longhurst & Seyfang 2013). Whereas in the past research may have focused more on the emergence of stability rather than change within social practices, that does not mean it cannot be used for exploring change. Warde (2014), for example, argues that 'the predominantly narrative form of explanation employed in empirical studies of practice is entirely suitable to accounting for change' (p.11). In recent years scholars have started to build on discussions of the dynamics of social practice to consider how they could be influenced or governed to achieve more sustainable

outcomes (Shove, Pantzar & Watson 2012; Spaargaren 2011; Spurling et al. 2013; Spurling & McMeekin 2015)

Spaargaren (2011) proposed three criteria to guide anyone seeking to change the reproduction of practices towards greater sustainability. The following considerations are suggested when selecting focal practices:

- the practices should be relevant and recognisable from the viewpoint of a citizen-consumer or 'practitioner'.
- the consumption practices should be relevant to environmental and climate governance i.e. will changes in the practice lead to a changing impact? This would include practices with significant environmental footprints, as well as new, or non-mainstream practices and those that have a high potential for leading to eco-innovation.
- the consumption practices should be grouped within clusters or sets of practices that fall within a limited number of 'domains' of everyday life, to prevent research and policies becoming too fragmented.

According to Spaargaren (2011), practices within a domain can be said to share sets of cultural rules and resources, and be connected to similar systems of provision. As an example, Spaargaren compares domains of food to housing, noting that they share some common criteria (CO₂-emissions, water-use), whilst also having their own specific elements. For housing, this would include meanings of comfort and security, whereas for food it could be meanings of freshness, animal welfare, and land-use.

The next section will look further at how governance of, and intervention into practices may take place.

3.4.1 Interventions in Practice – how to use practice theory for sustainability

Shove et al (2012) discussed a number of factors that influence the social practices in circulation. These included: the range of elements in circulation, the ways in which practices relate to each other, the careers and trajectories of practices and those who carry them, and the circuits of reproduction. Spurling and McMeekin (2015) and Spurling et al (2013) further identified three mechanisms for intervention by those attempting to govern and change practice: re-crafting practices, substituting practices and changing how practices interlock. These will be introduced in more detail below:

- Re-crafting practices - changing the elements that make up a practice (e.g. discouraging elements that lead to unsustainable consumption, and encouraging elements that assist sustainable consumption).
- Substituting practices - discouraging unsustainable practices in favour of existing or new alternatives.

- Changing how practices interlock - changing the way practices bundle together or interlock, as the complex interactions between practices can ripple through interconnected practices.

Re-crafting elements of practice:

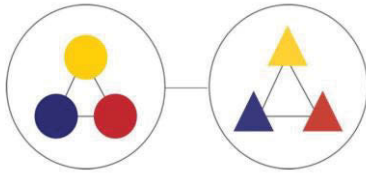


Figure 3-2: Re-crafting practices (Spurling et al. 2013)

Re-crafting practices refers to interventions that change the elements that constitute a practice (Figure 3-2). From a sustainable consumption perspective, this would mean changing elements in ways that reduce the resource intensity of that practice. As Spurling et al (2013) explain, many current intervention strategies can be seen as attempts to re-craft practice. Encouragements to use electric cars for city driving could be seen as one example in which the material element of an electric car is substituted for a conventional car, without significantly changing competences or meanings. Even if the electricity used to charge the car comes from a fossil fuel source, the GHG emissions per km are lower than for petrol or diesel cars, indicating a reduction in the environmental impact of the practice of driving. Programs to install energy and water efficient fittings in households change a resource intensive material aspect of lighting or showering practices. Reframing these interventions to consider them as attempts to re-craft existing practices can make changes more systematic and lead to new insights. For example, would the introduction of a new energy efficient material element be more effective if combined with appropriate know-how, and the activation of pro-environmental values.

This is what Spaargaren (2011) would call the 'ecological modernization of practices' (p.815). He describes this as:

the process of incorporating and anchoring into the practice the objects, meanings – e.g. the 'ways of doing and saying' – which are important for monitoring, assessing, valuing, and improving the practice with respect to its environmental or climate performance (p.816).

Exploring this mode of intervention in a low-energy housing development, Macrorie (2016) found that it was impossible to intervene in one element of practice 'without disrupting the practice as a whole, and causing repercussions on linked practice complexes and bundles' (p.283). For example, installing energy-efficient building materials in a carbon neutral home without also addressing associated meanings and competences led to failures of various equipment. She therefore recommends that re-crafting of individual elements should always pay attention to the interrelations between practices.

Substituting (changing) practices

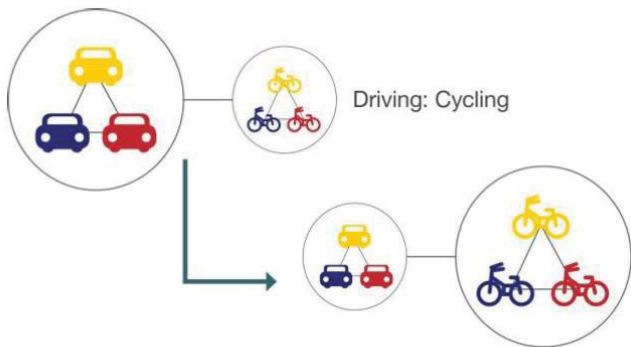


Figure 3-3: Substituting practices (Spurling et al. 2013)

Substituting practices refers to interventions that discourage unsustainable practices in favour of existing, or perhaps new, alternatives (Figure 3-3). The demand for the practice is taken to be 'non-negotiable' (Shove 2002), so the focus is on how this demand can be met, rather than changing the demand. Spurling et al (2013) suggest two ways to achieve this:

- Competition between practices for time, space and resources (e.g. cycling rather than driving to work)
- Encourage more sustainable variants of a practice (e.g. acquiring new clothes through clothes swapping or shopping at a second-hand store)

In the above example of clothes shopping, it is assumed that the demand for acquiring clothes is steady. Instead, interventions could encourage new forms of acquiring clothes such as using clothes swaps or second-hand clothing stores. Alternatively, interventions that encourage repair practices could be considered. This differs from re-crafting interventions to reduce the environmental impact of clothes shopping, which could include: labelling and education campaigns to teach consumers to buy clothes with a lower impact (competences), campaigns to encourage people to buy less (meaning) or attempts to change the material impact in the clothes production process so the clothes were more sustainable (material).

The boundaries between intervention categories can be blurry, as elements of practice are often likely to be the targets of this intervention, and changes to elements can lead to both shifts to new practices and how the practices are interlinked. Elements of practice may still represent the entry point for a practice substitution intervention, however, the end goal (coming from the policy perspective of Spurling et al (2013)) of the recruitment to or defection from practices is distinct.

Macrorie (2016) found that for an intervention in the practice entity to be effective, it was crucial to generate opportunities to reproduce sustainable practices-as-performances over the long term. Without this, the newly-introduced practice would begin to die-off.

Changing the system of interlinking practices

Increasingly, scholarly attention is broadening from theoretical approaches that focus on single practices, to the broader arena of many intersecting practices (Halkier, Katz-Gerro & Martens 2011; Hargreaves 2011). Practices can relate to others in many different forms, e.g. collaboratively, competitively, weakly or strongly. These relationships have impacts for 'the trajectories of the elements and individual practices of which composite bundles and complexes of practice are made' (Shove, Pantzar & Watson 2012, p.120).

Spurling et al (2013) suggest a third way of targeting interventions is to look at how practices interlock, with a particular focus on infrastructures and institutions. They highlight two ways in which this happens:

- Synchronisation of practices
- Sequences of practices

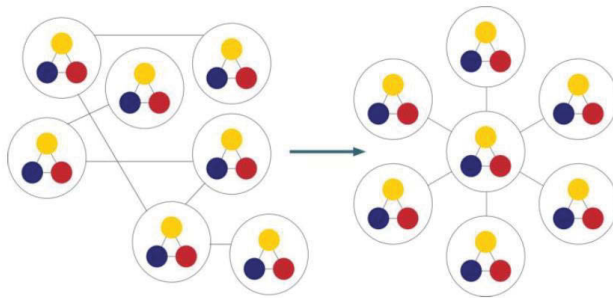


Figure 3-4: Changing how practices interlock (Spurling et al. 2013)

Practices are connected in systems, so a change in one practice will have ripple-on, or sometimes more dramatic, effects on many other practices within the whole system of which it is part (Watson 2012) (See Figure 3-4). Spurling et al (2013) quote an illustrative example from Watson

... the shifting character of grocery shopping is inseparable from shifting patterns of personal mobility, with out of town supermarkets co-evolving with patterns of personal car mobility, and with broader restructuring of the temporal rhythms of daily life that are enabled by, and make necessary, the convenience of provisioning a household with a single shopping trip to one destination (Watson, 2012: 491).

This framing views the demand for a specific practice as changeable, an emergent property of the whole system of practice (Spurling & McMeekin 2015). Therefore, changes in the overall system can change the demand for the practice itself. What constitutes a system of practice has been described as a 'fuzzy' concept (Macrorie 2016). Macrorie (2016) aims to clarify by defining them as:

a relatively stable configuration of linked practices and relations that together sustain a particular socio-technical mode of doing and can vary in size and complexity from a

modest complex or bundle of practices, to an intricate, multi- dimensional configuration of practices (p.284).

The systems of practice approach has been 'particularly important in generating insights for interventions in practice aimed at delivering change towards sustainability (Macrorie, Foulds & Hargreaves 2014, p.98). This has the potential to be used to identify points of intervention that may create positive momentum in recruitment to desirable, or defection from undesirable, practices (Macrorie, Daly & Spurling 2014). The exploration of practices within intentionally sustainable communities will consider a multitude of different practices, bundles and complexes within the overall practice 'plenum' in each community. The systems of practice concept will be drawn upon to consider the manner in which different practices interlock in both time and space within the context of these communities.

3.5 Inter-relationship between social practice theory and transitions theories

This thesis has discussed intentionally sustainable communities as grassroots innovative niches, drawing on theoretical roots of sustainability transitions (the multi-level perspective [MLP] and strategic niche management [SNM]), and proposed using social practice theory to guide the understanding of the nature of innovation in household consumption within these communities. As already noted, these two theoretical traditions have been described as exemplary approaches by the reconfiguration approach to sustainable consumption (Geels et al. 2015b). Yet, there are ontological tensions between theories of practice and approaches to socio-technical transition like the MLP (Geels, 2010). There is a fundamentally different unit of analysis within each theory, with SPT concerned with transition in practice and the MLP concerned with transitions in regimes (Hargreaves, Longhurst & Seyfang 2013).

Theorists have sought to maintain the distinctiveness of the two theories. Shove and Walker (2010), for instance, arguing that the importance of the practitioner in generating, sustaining and overthrowing everyday practices is often obscured in discussions of sociotechnical transitions. Perhaps the key point of distinction between SPT and the MLP has been the flatter nature of relations between practices and the horizontal circulation of elements, in contrast to the hierarchical and vertical relations between the levels of the MLP. The MLP considers innovation to emerge through the 'vertically ordered levels of niche, regime and landscape' (Hargreaves, Longhurst & Seyfang 2013, p.407). This focus on innovation coming from below, from the niche, has been critiqued by SPT theorists who emphasise change emerging through the circulation and reproduction of practices cutting across multiple regimes and across different scales (Hargreaves,

Longhurst & Seyfang 2013; Shove & Walker 2010). Shove (2012) emphasises that 'change does not 'begin' outside (or below) these regime level dynamics: there is no point zero of novelty, but rather a process of ongoing (sometimes radical) transformation of existing elements'(p.59).

Transition theorists have attempted to accommodate this critique, suggesting that the different analytical levels should not be seen as a nested hierarchy, but rather as representing degrees of structuration or stability, with niche levels having the least structuration (Geels 2011).

While there are key tensions, theorists have argued that the MLP and SPT can provide complementary perspectives, so for example insights that MLP can provide may enhance a social practice theory based analysis of innovation in regimes (Hargreaves, Longhurst & Seyfang 2013). Watson (2012) also takes a pragmatic perspective to argue that 'processes of socio-technical transition can usefully be recast as transitions in 'systems of practice'' (p.491)

Within this thesis, practices and their elements are taken as the primary unit of analysis, with the MLP and particularly the concept of niches used as a heuristic framework in which to place the case study focus – intentionally sustainable communities. As discussed in the previous sections, innovation in practice is understood to require changes in the configuration of elements that form practice, or the substitution of different type of practice, or some change in the way practices interlock. Whilst cognisant of Shove's (2012) assertion that change in practice doesn't begin outside of the regime, but is rather part of an ongoing dynamic constantly occurring in every location to a greater or lesser extent, there are nevertheless circumstances (locations, communities etc.) in which existing configurations of elements and practices are less structured or stable and therefore more open to change, or where variations in elements or practice performance are more likely to spread and be adopted. Intentionally sustainable communities can be conceived in this way, as niche projects or environments that have deliberately tried to create a protected space in which the existing plenum of 'mainstream' practice is disrupted and where new elements (meanings, materials and competences), practices and configurations of practices have a greater chance of finding carriers and practitioners.

In Chapter 9, consistent with the pragmatic stance, and Capstick et al (2014, p.437) argument that it may be at the 'intersections between different theoretical approaches and paradigms that novel and important policy interventions are likely to be obtained', concepts from both SPT – interventions in practice – and Transitions – strategic niche management and grassroots innovations – are utilised to explore ways for intentionally sustainable communities to have a wider influence.

3.6 Summary

This chapter has introduced SPT as an appropriate framework for research into sustainable consumption, and in particular to explore innovation in household practices within intentional communities. It presents a way to understand the organisation of daily life as the recurrent performance of practices constituted by elements of material, meanings and competences. This creates a recognition that consumptive actions occur whilst performing practices that integrate material, social and cultural contexts (Spurling et al. 2013).

SPT is a suitable framework for researching household consumption practices within intentionally sustainable communities. It addresses key concerns with mainstream approaches to sustainable consumption patterns by: i) emphasising factors such as social relations, material infrastructure and context, ii) drawing attention to the importance of inconspicuous consumption, and iii) recognising the recurrent and iterative relationship between social practice and context (as discussed in Section 3.2). In addition, the application of SPT to the collective, community scale has the potential to reveal new insights for the theory, as it is a relatively unexplored area.

The conceptualisation of practices as the integration of elements allows a focus on the movement of the elements, and the processes that can spread different elements, to understand how practices circulate and evolve within, and away from, intentionally sustainable communities.

This also leads to certain understandings of how practices can be governed or changed to be more sustainable, as outlined in the interventions in practice framework (Spurling et al. 2013; Spurling & McMeekin 2015). The next chapter will bring together the objectives that were developed from the review of the literature and the understanding of SPT as discussed in this chapter to define and justify the design of this research.

Chapter 4. Research Design

4.1 Introduction

In Chapter 2 I reviewed the unsustainability of current levels of household consumption globally, with a focus on the most affluent nations. I've discussed the growing movement of intentional communities seeking to address issues of sustainable consumption, identifying ecovillages and many cohousing communities as the types of communities most commonly associated with pro-environmental and pro-sustainability goals, and collectively termed these types of communities intentionally sustainable communities (ISCs). In the previous chapter I introduced social practice theory (SPT) as a suitable framework with which to explore alternative consumption practices within ISCs, noting the limited research that had examined sustainable practices within collectively developed and managed communities. The current chapter describes the research questions and approach developed to address the objectives outlined in Chapter 2, based on a pragmatic epistemology and a mixed method methodology (case study, systematic review and ecological footprint). The selection of the case studies, the methods employed to inform the case studies, and the analysis of the empirical data are all discussed in the following sections.

Table 4-1: Summary of the research framework

Epistemology		Environmental pragmatism	
Methodology		Mixed method	
Phase 1	Approach	Systematic literature review	
Phase 2	Approach	Case studies (Purposively selected representative cases)	
	Methods	<i>Participant observation</i>	Bundagen - One stay – 6 nights Murundaka – Two stays – 7 nights
		<i>Ecological Footprint analysis</i>	Bundagen - 14 survey (15% of households or 19% of residents) Murundaka – N/A
		<i>Individual interviews</i>	Bundagen - 7 individuals Murundaka – 9 individuals) Planning, housing and urban development professionals – 6 individuals
		<i>Group Interviews</i>	Bundagen – 6 attendees Murundaka – 6 attendees
		<i>Documentary analysis</i>	Bundagen – website, newsletters, by-laws Murundaka – website, posters, newsletters, award submission, blogs

4.2 Research paradigm

The epistemology, or paradigm, is the theory of knowledge underlying the theoretical perspective and hence the methodology of a research design (Crotty 1998). The epistemological stance that underlies this research is grounded in pragmatism. A pragmatic approach considers that valid claims of knowledge arise 'out of actions, situations, and consequences rather than antecedent conditions' (Creswell 2002, p. 11). It is concerned with finding solutions to problems, with researchers being open to any approach useful in gaining insights into the particular problem. As Creswell (2002) notes, pragmatism takes many forms. This research has been particularly influenced by environmental pragmatism, an approach that has emerged out of the constructivist versus realist debates of environmental sociology, and combines aspects of both epistemologies (Dunlap 2010). The pragmatic approach:

'treats accounts of environmental conditions – whether lay or scientific – as potential indicators of ecological problems and examines the complex ways in which these conditions/problems are interrelated with social phenomena via empirical investigation' (Dunlap 2010, p.23).

As others have highlighted (Glover 2012; Middlemiss 2009; Schultz & York 2011), sustainability research is intimately concerned with maintaining the natural world in a state that supports the continual existence of the social world; placing 'human society within its broader ecological context' (Schultz & York 2011, p.140). Research exploring sustainable consumption is concerned with the interaction between the social arrangements that give rise to certain forms of consumption, and the natural world, which functions as a 'supply depot', 'waste repository' and 'living space' for human beings (Dunlap 2010, p.17). As Middlemiss (2009) summarises; 'The importance of changing consumption practices can only be fully understood when we accept that a real physical impact on the world will occur as a result of these changes' (p.50).

The environmentally pragmatic epistemological stance underlying this sustainable consumption research draws on methodologies that are realist-based, making pragmatic use of indicators of environmental conditions, and are used in conjunction with in-depth, qualitative case studies that consider the impacts of values, culture and social constructions. This mix of realist and constructivist approaches is a common characteristic of environmental pragmatism (Dunlap 2010).

As Dunlap (2010) describes, a fundamental premise of the realism camp in the environmental debate is that 'when dealing with issues like climate changes we have no choice but to rely on scientific evidence, despite its imperfections' (Dunlap 2010, p.21). Concepts of planetary boundaries (Steffen, Richardson, et al. 2015) and ecological footprints (Rees & Wackernagel 1994), for example, are attempts to measure and represent the material reality of the impacts of humanity's consumption on the natural world. Ecological footprint studies are a form of appraisal based on a

positivist epistemology, designed as potential indicators of ecological problems. They use a techno-rational model to develop an objective appraisal of a certain situation, in this case the environmental impact of the object of study, even if it will necessarily be an imperfect appraisal (Collins & Flynn 2015). However, these indicators are social constructs, with subjective choices involved in deciding what is included in the indicators, how they are interpreted, and when the indicators are used. A pragmatic approach recognises that these indicators, and also environmental and sustainability values, issues and policies, are socially constructed. The focus is 'on analysing linkages between the symbolic, socio-cultural and material realms' (Dunlap 2010, p.23).

From the realist perspective, consumption is considered more sustainable when changes to consumption result in a beneficial change regarding the impact on the natural world. The first phase of this research employs a systematic review of ecological footprint (EF) and carbon footprint (CF) studies to understand the extent to which intentionally sustainable communities are reducing their environmental impact. EF and CF are widely accepted, rigorous indicators of environmental impact, and whilst the indicators have limitations, these are well understood and acknowledged (Barrett et al. 2005; Moos et al. 2006).

Building on this first phase, and consistent with a pragmatic paradigm, this research draws on constructivist perspectives to explore sustainable consumption as a socio-cultural phenomenon, as a set of values and ideals that influence everyday actions based on perceptions of sustainability. In-depth qualitative case studies are undertaken which recognise, and to a large extent focus on, the socially constructed understanding of sustainability, and how this is enacted in the social practices of intentional communities. It is recognised that the meanings that individuals construct to understand their world are many and varied, and research should explore the complexity of different viewpoints (Creswell 2007). In this exploration, it is important that participants' views of the situation being studied are emphasised as central (Crotty 1998). As will be explored in more detail later in this chapter, the majority of the empirical data used in this research comes from case studies of intentional communities, exploring how sustainability is practiced within these communities. Whilst exploring how people conceive of, and enact practices that are considered sustainable, it is essential to understand how the meanings individuals carry of what is and isn't sustainable are also shaped by their social context.

A key implication of the pragmatic approach is the recognition that interviewees have their own way of knowing and understanding the world, which will impact on the way they perceive their everyday and not-so-everyday sustainable consumption-related actions and practices. In addition, the way they describe, explain and justify these phenomena may be influenced by the interviewee's perceptions of the researcher. They may emphasise certain 'sustainable' actions that only represent a small, potentially insignificant part of their lifestyle because it may be of interest to the researcher,

or downplay unsustainable practices that do not match with the 'sustainable' image role they are playing as members of an intentional community with pro-environmental goals. Giddens (1984) refers to this as the 'double hermeneutic', meaning that social researchers need to 'interpret their subjects, who themselves are social actors interpreting the world' (Glover 2012, p.70). Researchers must be cognisant of the subjectivity of those they are researching, as well as their own subjectivity.

As discussed in the previous chapters, the theoretical framework for this research draws particularly on the field of practice theory (Shove, Pantzar & Watson 2012), and on the multi-level perspective as a 'heuristic device' that can guide the researcher through relevant questions and problems (Geels 2011). These theories fit comfortably within an environmentally pragmatic epistemological frame that recognises 'both the reality of environmental problems and the way public understanding of them is, to some degree at least, socially constructed' (Schultz & York 2011, p.141). Furthermore, the pragmatic stance is compatible with the use of mixed methods research methodology while focusing on sustainable consumption. It accepts the use of both objective indicators such as EF and CF, and the interpretations of social reality that arise from participant interviews. The research agenda that results from the adoption of a pragmatic epistemological stance, and social practice theory as a primary theoretical framework, will be discussed in the following section.

4.3 Research agenda

The overall aim of this research was presented in the introductory chapter, in Section 1.4.1. Essentially, it has sought to understand:

if intentionally sustainable communities are an effective response to environmental issues, how sustainable consumption is enacted in these communities, and how they can contribute to the adoption of more sustainable consumption patterns on a wider scale.

Given this aim, Chapter 2 reviewed literature from the fields of sustainable consumption, grassroots innovations, and studies of intentional communities, as well as touching on the theories of behaviour change, social practices and socio-technical transitions. This review indicated that a contribution could be made by investigating sustainability innovations in household consumption within intentional communities such as ecovillages and cohousing communities. From this review, a number of key research objectives for this doctoral research were outlined in Section 2.6.2. These described a need for:

- Improvement to the evaluation of the measured environmental performance of intentional communities

- Expand knowledge of grassroots innovations by considering new types of initiatives (intentionally sustainable communities) in new geographic contexts (Australia).
- Exploration of environmental sustainability innovations within the context of the Australian intentional community.
- Application of social practice theory to look at the varied innovations in everyday consumption that develop within the intentionally sustainable communities niche
- Improved understanding of how an intentionally sustainable community could intervene to improve the sustainability of mainstream populations.

Chapter 3 reviewed social practice theory as the theoretical framework guiding this research. It introduced key concepts about: the composition of practices, the dynamics of how they are reproduced and stabilised, and how they may evolve, spread or disappear. Governance of practices towards sustainability goals was also discussed, particularly the different approaches to intervening in practices.

Given the guiding aim of this research project, and the findings from Chapter 2 and Chapter 3, four key research questions have been developed. These were outlined in the introductory chapter (Section 1.4.2), but will be more fully explained below.

4.3.1 Research questions

The first research question aims to contribute to the first objective outlined above. Section 2.5.2 summarised many of the sustainability claims of cohousing communities and ecovillages. It noted that quantitative research measuring the extent to which intentional communities have reduced their environmental impact is limited. Those studies that did measure ecological or carbon footprints of intentional communities found positive results (e.g. (Stephen Tinsley & George 2006). However as noted by Wagner (2012) there is a deficit in the evaluation of ecovillages' performance. Given the aims of my thesis, the first step was to strengthen the research foundations upon which discussions about sustainability in intentional communities could be based. Therefore, the first question posed was the following:

RQ1 - To what extent do intentionally sustainable communities (ecovillages and cohousing communities) have a lower environmental impact than other communities?

The second question directs the research towards developing an in-depth understanding of how intentional communities are lowering their environmental impact. Chapter 2 discussed the significance of end-user or household consumption as a driver of environmental degradation. This understanding guides the research towards exploring the sustainable consumption strategies that are apparent within intentionally sustainable communities.

Chapter 3 introduced social practice theory (SPT) as a theory with great relevance for the study of sustainable consumption (see Section 3.2). As has already been discussed, SPT is seen as an appropriate theory to address some of the issues associated with mainstream approaches to creating sustainable consumption patterns (Geels et al. 2015a; Shove 2010). It highlights the importance of everyday, inconspicuous consumption (Shove & Warde 2002), raises different questions about how to create more sustainable patterns of consumption, and has been described as an appropriate theory to use in the context of community-based grassroots initiatives (Middlemiss 2011). An exploration of the sustainable practices occurring within the grassroots niche of sustainable housing communities has the potential to discover information about 'new' or non-mainstream practices that, Spaaragaren (2011) states, could be of strategic interest for policy makers.

Social practice theory shifts the focus from individuals' attitudes, behaviours and choices to how practices form: how they are reproduced, maintained, stabilised, challenged and ultimately killed-off; how practices recruit practitioners to maintain and strengthen them through continued performance; and how such practitioners may be encouraged to defect to more sustainable practices (Hargreaves 2011). As discussed in Section 3.1.1, practices result from the integration of various interrelated elements. Conceptions of these elements differ amongst scholars, but this research considers three elements: meanings, materials and competences (Shove & Pantzar 2005; Shove, Pantzar & Watson 2012). Bringing the elements of practice into focus allows a better exploration of the dynamics of social practice (Shove, Pantzar & Watson 2012).

To date only limited research has used an SPT approach to understand 'sustainable' practice in intentionally sustainable communities (such as ecovillages) where collective and collaborative living practices influence everyday consumption. There is also limited research exploring sustainable consumption in Australian intentional communities. Research Question 2 seeks to contribute to both these areas by asking:

RQ2 - What practices are Australian intentionally sustainable communities performing in order to reduce environmental impacts or improve the sustainability of the household? How do they differ from mainstream practices? What are the elements that contribute to the sustainability of these practices?

The goal of changing consumption patterns requires an understanding of how practices may be altered to become more sustainable. The framework guiding interventions in practice, introduced in Chapter 3, was written with policy makers in mind (Spurling et al. 2013; Spurling & McMeekin 2015). Nevertheless, it represents a useful framework for examining how more sustainable everyday

practices have been encouraged within the case study communities. At first glance this may seem problematic, as the community members are clearly embedded within the everyday practices that form the focus of this research, and are not viewing the sustainability of every practice from the outside perspective of a policy maker.

As Shove et al (2012) note however, it is not true that policy makers are separate from their interventions in other areas of life. They are embedded within the very systems of practice that their interventions seek to influence, as is the case within the case study communities. At the same time, the residents of intentional sustainable communities are implicated in designing policy that shapes their everyday lives through the community governance arrangements. Further, many communities, including those studied for this project, have explicit pro-environmental and sustainability goals, and to large extents have attempted to shape the materials and infrastructures within the communities, the knowledge and skills of community members, and even the socially shared meanings of members in aid of those goals. For example, the Bundagen Cooperative Community, which is one of the case studies for this research, has a regularly updated document containing almost 100 pages of By-laws and other community agreements that community members must comply with (Bundagen Community 2015). So, whilst these communities were not designed specifically as interventions in practice (with an SPT framing), the members of Murundaka and Bundagen are both practitioners and policymakers of their everyday lives.

Applying the interventions in practice framework prompts research question 3, and a number of sub-questions that can help to understand everyday sustainability innovations in the case study communities:

RQ3 - Why do the practices and elements of Australian intentionally sustainable communities differ from mainstream communities? What is the role of the intentional community in changing the practices of community members through interventions in:

- **elements of practice,**
- **relations and interlinking between practices, and**
- **the recruitment of carriers to more sustainable, or innovative practices (RQ3)**

Implicit in the phrasing of RQ3 is a conception of what is meant by a 'sustainable' or 'unsustainable' practice, as well as what is 'normal' or 'mainstream' household practice. The factors influencing the sustainability of household consumption practices were discussed in Chapter 2 (Section 2.3), providing guidance from the literature as to which actions can be considered more or less sustainable. This literature informs the understanding of sustainability that is discussed in Chapters

6 and 7. What has not been made explicit is the understanding of 'normal' or 'mainstream' practice. It is not the intention of this research however to quantify sustainability practice in the case study communities, nor directly compare them to those in mainstream households. Nevertheless, it is useful to frame further discussion with a greater understanding of household sustainability practice in mainstream communities.

Waite et al (2012) conducted a large-scale survey (n=1465) of households in Wollongong, NSW to understand their 'pro-sustainability' practices. This research provides relevant and useful empirically grounded data on Australian household practices. Wollongong is the tenth largest city in Australia (pop. 303,590 in 2017) (Australian Bureau of Statistics 2016). It is geographically spread out, which gives it a diverse urban form. In the sample suburbs this ranges from higher density inner-city apartments to low-density detached suburban housing (with detached housing accounting for ~75 per cent of respondents). The researchers asked households how frequently they engaged in 36 pro-sustainability practices described as common to conventional government policies. These practices fell into the categories of water consumption, shopping (household purchasing) practices, recycling practices and energy consumption.

The first stage of their analysis revealed four clusters of sustainability-related household practices, which they labelled as: mainstream practices, big ticket purchase decisions, everyday purchase decisions and labour intensive or "green branded" practices. These clusters, and the practices within each cluster, are summarised in Table 4-2. The researchers noted that environmental household action was more closely related to daily household practice than particular sectors (i.e. transport, energy or water). This was one of the reasons cited in Chapter 3 for using SPT in sustainable consumption research.

Table 4-2: Sustainability related household practices grouped according to the four clusters (modified from (Waite et al. 2012))

Cluster	Household practice
Cluster 1: 'mainstream practices' These practices were frequently reported across all households, suggesting they are stable and widespread practices	recycle glass, plastic bottles and cans
	recycle newspapers
	switch off lights in unoccupied rooms
	avoid keeping the tap running when washing dishes
	turn off the tap whilst cleaning teeth
	take old clothes to the charity shop
	donate old household items to charity
	wait until a full load of laundry before commencing washing
	put on extra layers of clothing before turning up the heating
	purchasing energy efficient household appliances
	repair clothing

Cluster	Household practice
Cluster 2: 'big ticket items' these were understood as good or bad for sustainability	use air-conditioning in rooms that are too hot
	use of pesticides
Cluster 3: everyday purchasing decisions indicating a shift in households towards sustainable consumption patterns	shorter showers to save water
	reduce the number of times the household flushes the toilet to
	use of environmentally friendly detergents wherever possible
	avoid products in aerosol containers
	reuse of glass bottles and jars
	reduce the number of showers a household has in a day
	purchase produce with as little packaging as possible
	shop with own bag
	purchase local produce wherever possible
	purchase plants that require less water
Cluster 4: labour intensive or 'green branded' practices	reuse of scrap paper
	reduce hot water temperature
	compost kitchen waste
	compost garden waste
	purchase food from a store that I walk to
	grow our own fruit and vegetables
	purchase organic produce
	purchase fair-trade wherever possible
purchase toilet paper made from recycled paper	

The frequency distribution across all these sustainability practices (arranged in the clusters) for households was determined, and grouped into households that had strong, moderate or limited engagement with sustainability practices. Based on this distribution, 34% of households were in the strong category, 48% in 'moderate', and 17% in the 'limited' category. Here, the data for 'moderate' households appears to best represent 'normal' household sustainability practises.

Which practices does this research indicate are mainstream sustainability practices in Wollongong households? According to the analysis by Waitt et al (2012), moderate households were very committed to 'mainstream practices' of recycling, reusing and some reductions of water and energy consumption in household routines of laundry, dishwashing and purchasing energy-efficient appliances. Over 80% of households *always* or *usually* performed these practices, which can readily be considered 'normal' sustainability practices. Moderate households were less committed in the 'everyday purchase decisions' category, with between 40%-60% of households performing these *always* or *usually*. Moderate households showed 'little to no involvement in those activities

categorised as labour intensive or 'green branded' consumption practices' (Waitt et al. 2012, p.68). These can be described as uncommon household practices¹⁶.

The last objective outlined above considered how intentionally sustainable communities might be influencing sustainable consumption practices outside of the bounds of the specific communities. Grassroots niches such as intentionally sustainable communities are conceptualised as having the potential to seed systemic change (Geels 2011). This raises the question: what is being done to encourage defection from unsustainable practices and recruitment to sustainable ones on a wider scale, and what more could be done? Again, the interventions in practice framework can be useful, guiding research question 4 to ask:

RQ4 - How are intentionally sustainable communities influencing sustainable consumption practices on a wider scale?

4.4 Methodology

Intentionally sustainable communities have been identified as an appropriate setting to explore sustainable consumption practices. The next stage of the research design is the selection of an appropriate methodological framework. The methodology is 'the strategy, plan of action, process or design lying behind the choice and use of particular methods' (Crotty 1998, p.3). It explains how the chosen methods will work towards achieving the desired research outcome.

The methodological approach of the research is mixed method, encompassing qualitative case studies, a specific systematic review and ecological footprint survey of one of the case study communities. Further details and context for the research methodologies within each phase will be given below.

Mixed method research inquiry has been defined as 'the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study' (Johnson & Onwuegbuzie 2004, p.17). Johnson et al (2007) describe pragmatism as the primary philosophy of mixed method research, as this methodology 'attempts to consider multiple viewpoints, perspectives, positions and standpoints' (p.113). This

¹⁶ Strong households had the 'highest frequency of always engaging in all four major clusters of sustainable household practices... they reduced direct household water and energy consumption as a matter of concern, priority and everyday practice, complemented by a strong sustainable action through the purchasing decisions of many household items. Yet there were limits beyond which even 'strong' households were unable, or unprepared to act. Even the majority of 'strong' households did not report 'always' purchasing food from a store they had walked to, purchasing organic produce or growing their own fruit and vegetables.' (p63)

research approach is an appropriate way to explore how people understand and construct the enactment of sustainability in their everyday lives, while also using indicators of environmental impact.

Two separate phases of research address the questions, objectives and aims outlined above:

1. Systematic review of quantitative studies of the environmental impact of consumption within ecovillage and cohousing communities (RQ1)
2. Multiple case studies of Australian intentionally sustainable communities (RQ2, RQ3 & RQ4):
 - a. 'Mapping' intentional communities in Australia that had sustainability or pro-environmental aims, in order to select two communities as case studies
 - b. Case study research of two Australian intentionally sustainable communities to provide in-depth analysis of the sustainable practice
 - c. Interviews with a selection of housing and planning professionals who had interacted with Murundaka Cohousing Community, one of the case study communities

4.4.1 Systematic review of environmental impacts of intentionally sustainable communities

The first phase of the research was designed to address the first research question regarding the extent to which intentionally sustainable communities are lowering their environmental impacts. Section 2.5.2 summarised many of the sustainability claims of cohousing communities and ecovillages. The conclusion was that there are strong indications that these communities are lowering their environmental impact, but evaluations of performance have been few in number. Whilst the commonly cited footprint studies showed promising results, the small number of communities discussed makes it difficult to generalise these findings to other communities with similar sustainability ambitions and goals. In the early stages of the research project, whilst preparing a presentation on the *Ecological Footprints of Intentional Communities* for the Australian Intentional Communities Conference 2013, it was noted that there were more studies measuring the consumption footprints of intentional communities than were commonly cited in the literature.

This recognition led to the development of a systematic review methodology to address this research question. Systematic reviews differ from other literature reviews in that they follow a replicable, scientific and transparent process, and carry out an exhaustive search of a specific body of literature (Network for Business Sustainability 2011). The key benefits of this kind of review are that it is both 'systematic and replicable, giving confidence to the users it informs regarding the status of present knowledge on a given question' (Rousseau, Manning, & Denyer, 2008, p. 500, cited by Briner & Denyer 2010). It follows that this systematic review aimed to establish what is currently

known about the quantitative environmental impact of intentionally sustainable communities compared to other communities.

This systematic review was published in *Local Environment: The International Journal of Justice and Sustainability* (Daly 2017), and is included in its entirety as Chapter 5 of this thesis. Details of the methods employed in the review are contained in Chapter 5 and will not be discussed further in this chapter.

4.4.2 Phase 2A - Case study methodology

The main phase of the research involved in-depth analysis of the environmentally beneficial practices that occur within the selected case study initiatives using a case study methodology. Case study methodology draws upon empirical enquiry to 'investigate a contemporary phenomenon (the case) in depth and within its real-world context' (Yin 2014, p.16). This allows a flexible approach to understanding a particular case or multiple bounded cases of research interest (Creswell 2007). Through the collection of data from multiple sources and subsequent convergence of the data into an overall case, the multiple facets of a phenomenon can be revealed and understood (Baxter & Jack 2008).

The case study approach is described as particularly interesting when the phenomenon under consideration is complex involving numerous actors, goals and interacting elements. It is particularly appropriate for answering questions about how or why things have happened (Yin 2014). This is because case studies allow for 'depth' in the investigation of the particular phenomenon, as opposed to 'breadth' in the investigation, for which other approaches such as surveys would be more appropriate.

The most commonly discussed concerns about case study research pertain to its validity (potential lack of rigour), generalisability and usefulness in generating and testing theory (Flyvbjerg 2006; Yin 2014). Flyvbjerg explores five common misunderstandings about case study research, which relate to the above concerns, as well as the unwieldiness of summarising in-depth case studies. Flyvbjerg (2006) contends that the case study methodology 'contains no greater bias toward verification of the researcher's preconceived notions than other methods of inquiry.' (p.237). Whilst arguing that generalisability from single cases is often possible, he makes the case that 'formal generalization is overvalued as a source of scientific development, whereas "the force of example' is underestimated' (p.228). Instead, case studies, as 'concrete, context-dependent knowledge', are described as 'more valuable than the vain search for predictive theories and universals' (Flyvbjerg 2006, pp. 223-4).

Yin (2009) describes three strategies that researchers can employ to improve the validity of case studies. The first is to triangulate research data by drawing on multiple sources of evidence (Yin

2009, p.117). A second strategy is for the researcher to maintain a chain of evidence to show all the stages in the process of case development (Yin 2009, p.122–3). Finally, researchers can provide a draft of the case study report to participants for their review and feedback on the interpretation and sense-making of the researcher (Yin 2009, p.182–3). All these elements have been included in the research design.

Case study selection - Database of Australian intentional communities

The first part of the case study research sought to understand the landscape of intentionally sustainable communities in Australia so that suitable cases could be confidently selected. A database of Australian intentional communities was created, that aimed to achieve good coverage of the potentially relevant communities, but did not aim to be exhaustive. The goal of compiling this database was to provide a 'snapshot' of initiatives that could be used to inform case study selection (Walker et al. 2007).

The basic criteria for selecting the intentional communities to include in the database were that they were i) already established or currently forming, ii) located in Australia, iii) grassroots initiatives that were created with the involvement of the community members (i.e. not speculative 'eco-developments'). This third point is consistent with the focus on grassroots innovations as a key research area identified in Section 2.4.

As the research focus was intentional communities that were shifting to sustainable consumption patterns, information was also collected that indicated communities that were practising (or trying to practice) sustainable consumption. This drew on the New Economics indicators for sustainable consumption outlined in Section 2.3.1 (Seyfang 2010) as a framework for a high-level assessment. The sustainable consumption indicators used were: localisation, reducing EF, community-building, collective action, and new infrastructures of provision.

Information about communities was drawn from publicly available databases of established and forming communities, maintained (to varying degrees) by the Global Ecovillage Network, the Fellowship of Intentional Communities and Cohousing Australia (details of these databases are provided in Table 4-3). These databases were designed for community members to self-enter data, so the comprehensiveness of the number of communities listed, and the data available for each community varied significantly. The information drawn from existing databases was supplemented with other publicly available information from sources such as academic papers, books, websites, and online blogs.

Table 4-3: Existing online resources for grassroots sustainable housing initiatives (web addresses and number of initiatives were current at the time of database creation in 2013)

Initiative	Organisation	Website ¹⁷	Australian Initiatives
Intentional Communities	Fellowship for Intentional Communities	http://directory.ic.org/iclist/geo.php	66
Intentional Communities & cohousing	Cohousing Australia	http://www.communities.org.au/projects	33
Ecovillages	Global Ecovillage Network	http://genoa.ecovillage.org/index.php/ecovillages/find-an-ecovillage	30

The Australian Intentional Communities Conference 2013¹⁸ was attended during this stage of the research process. This provided an opportunity to supplement the information already gathered in the database, and also create links with community members that would prove extremely useful in arranging access for the case studies.

The data collected for each initiative included:

- Size (membership size and land area)
- Stage of formation and year of foundation
- Geographical location (remoteness – major city, inner regional, outer regional)
- General community information (aim, description, shared facilities, decision-making process, financing style, dietary customs)
- Type of initiative (cohousing, ecovillage and land co-operative)
- Information to assess New Economic indicators for sustainable consumption.

The information collected for the sustainable consumption indicators (final bullet point) included: community vision statements, details of shared facilities and meals, amount of food grown on site, evidence of local businesses within the community, governance and decision-making structures of the community (i.e. level of participation of members), and use of sustainable technologies. Given the reliance on publicly available information, it was hard to avoid a significant degree of subjectivity in the high-level categorisation of initiatives, as Kent (2012) noted in her work with Climate Action Groups. The criteria used was necessarily imprecise during categorisation at an early stage of research, especially for the sustainable consumption indicators.

¹⁷ The web addresses for these databases at the time of thesis publication are:

i) <https://ecovillage.org/projects/>, ii) <http://www.ic.org/directory/search/>,
iii) <http://www.communities.org.au/projects>

¹⁸ <http://www.aicconference.com/conference/previous/2013-moora-mora>

Selection criteria

The selection strategy for choosing the case studies from the database would be described by Flyvbjerg (2006) as an information-oriented selection. The case studies in this research aimed for an in-depth understanding of the focus communities, which therefore limited the number of cases that could feasibly be undertaken. A common misunderstanding of case study research (as outlined by Flyvbjerg (2006)) is that the small sample size (small number of cases) limits the reliability, validity and generalisable theory-building capacity of the research. Flyvbjerg (2006) outlines strategies for selecting cases, stating that the selection should be based on the expected information that can be gained from those cases, to maximise the utility of the information obtained. For this research, the focus was on households that had significantly improved the sustainability of household consumption, with 'intentionally sustainable communities' already identified in the literature review as a likely area in which to find such households. Therefore, at this first level of selection, intentionally sustainable communities have been identified as an example of an 'extreme/deviant case', they are unusual because they are 'especially good' in terms of sustainable consumption (Flyvbjerg 2006, p.230).

Mapping initiatives provided a useful understanding of the diversity of type, size, and location of Australian intentional communities. It also gave a high-level understanding of the sustainable consumption activities that occur within the niche. A total of 62 communities were catalogued. The information collected for the sustainable consumption indicators was used to narrow this pool to just the 'intentionally sustainable communities'. Twenty-six were considered as potential candidates, and of these, thirteen were shortlisted as the most promising options for case studies. The other thirteen communities were either in the formation stages or there was not enough publicly available information to develop a sufficient understanding of the sustainable consumption practices of the community. The shortlist of the community mapping process is included as Appendix A. Once the final pool of thirteen communities was established, the criteria changed for the selection of the final case studies. This is discussed in the following section.

Final selection justification

The final selection of case studies from the pool of thirteen communities sought to meet three criteria. Firstly, they needed to exhibit characteristics representative of intentionally sustainable communities, indicating they were sites of sustainable consumption practices. Secondly, they were chosen to represent the diversity of intentionally sustainable communities in Australia in terms of the size, type and age of community, and geographic location. Finally, the communities had to be willing to participate in the research. Based on these criteria, two communities – Bundagen Cooperative Community and Murundaka Cohousing Community - were selected for detailed case studies.

The first criteria was to ensure that these communities represented intentionally sustainable communities. Conceptually, there are many similarities between Bundagen Cooperative Community and Murundaka Cohousing Community. They can both be described as intentional communities, voluntarily coming together to create alternatives to mainstream society. Both also have visions or principles (See Section 4.4.3) outlining a consciously created alternative way of living, that includes an expressed pro-environmental or sustainability aims (Metcalf 2004). Other factors the communities share include: some current members were involved in the conceptual and practical creation of their communities; both are cooperative entities; residents manage the governance of the communities; they use forms of consensus decision making; and they both have extensive shared community facilities. Finally, both are listed on intentional communities databases¹⁹, and attended the 2013 Australian Intentional Communities Conference, which was specifically tailored to communards.

Both case study communities can be considered excellent examples of sustainable living practice. The information collected for the database showed both communities had a number of initiatives that were encouraging sustainable consumption. Although this wasn't available at the time of case selection, data obtained during the research showed quantitative indications that they had a lower ecological footprint (Bundagen) or energy consumption per household (Murundaka) than equivalent local communities or households.

The second criteria sought to represent the diversity of Australian intentionally sustainable communities. Bundagen and Murundaka were not chosen to represent extremes on the intentionally sustainable community spectrum, instead they were selected to represent the spread of revealed diversity of communities. Flyvbjerg (2006) describes maximum variation case selection as choosing cases that vary across one dimension (e.g. size, location). As the communities chosen differed in multiple dimensions, caution was needed in comparing or generalising from the cases. However, the primary aim in selecting the case studies was not to compare variation in practice between the two communities, though certain examples were noted where it was pronounced. Given the number of dimensions across which these communities vary, they are best described as being purposively selected representative cases from the pool of intentionally sustainable communities. The choice of two communities was made to balance the twin goals of adequately covering the diversity of the 13 shortlisted communities, whilst also providing time to explore the communities to the required depth during the research period. Whilst additional communities could have increased the diversity of the cases, there were significant logistical barriers. Australia is a large country and the time and cost involved in travelling to a third community were significant. For

¹⁹ Bundagen listed on the fellowship of intentional communities website (FIC 2016)
Murundaka on the Australian cohousing communities website (Cohousing Australia 2016)

example, one of the older cohousing communities (Pinakarri) in the shortlist was a 5-hour flight or 42-hour drive away. The closest 'old' cohousing community (Cascade) was a 2-hour flight. Choosing two communities enabled the inclusion of an urban cohousing development and an ecovillage-style rural intentional community, the two types of communities closely associated with pro-environmental practices (Beck & Ormsby 2016). It also covered variation in age of community, and size of membership. Therefore two communities were seen to give sufficient coverage of the diversity of communities, whilst being feasible within the aims and constraints of the research.

Founded more than 35 years ago, Bundagen is a large community with over 150 members on a large block of rural land, and has been in existence for over 35 years. Murundaka, on the other hand, was founded only 6 years ago, is of medium size (~ 35 members) and is a suburban apartment complex on three regular size suburban blocks. As well as these material differences, Bundagen is an ownership cooperative that operates independently, whilst Murundaka is a shared equity rental cooperative. Finally, Bundagen is more representative of a wave of intentional communities - the rural landsharing-type community - that emerged following the 1973 Aquarius festival in Australia (Fisher 2004; Metcalf 2008). Murundaka, on the other hand, represents the more recent, modern cohousing form of intentional community (Williams 2005b).

Creswell (2007) states that representative case studies improve the validity of generalisations drawn from the cases, though he cautions that generalisation should be made with care, taking into account different contexts. The differences between the case study communities prompted reflection at different points of the research process.

The final criteria concerned the practicalities of finding communities willing to participate in the research. This was key to selecting the final case studies from the pool of thirteen possible options. The case study research approach adopted involved spending a period of time living in the community. This is clearly an imposition, and requires the agreement of the communities involved. The final selection process was therefore an iterative one, given the different requirements of diversity and accessibility. The Australian Intentional Community Conference, provided an opportunity to both learn more about the potential case study communities, and meet members of those communities to sound out possibilities of undertaking research. There was already a shortlist by this stage, and the final selection relied on both discussions about sustainability within the communities and creating relationships that would potentially allow access for the research. In the end, gaining access was not particularly difficult: both Bundagen and Murundaka communities expressed a desire to participate and considered the research an opportunity to spread understanding about the way they were living. The impression received was that the desire for outreach had particular 'champions' in each community. Both communities did however hold discussions during their community meetings before deciding to participate in the research. The

research dynamic in play, of being granted permission to enter a community to conduct research obviously places a certain amount of implicit pressure to be positive about these communities – an issue other communities researchers have faced (Cooper 2016).

4.4.3 Description of case study communities

A brief description of the two cases study communities is given below (much more detail will be provided in Chapters 6 and 7), and a comparison of key similarities and differences shown in Table 4-5.

Bundagen Cooperative Community

Bundagen Cooperative Community is located on the mid-north coast of NSW, Australia, in the Coffs Harbour City Council local government area (LGA). It was established in 1981 as a rural land sharing co-operative, and is set across 313 hectares of coastal land on the Bundageree Headland (see Figure 4-1). The land is bordered on all sides by the Bongil Bongil National Park. While it feels very separate from the outside world, it is not isolated, situated only 5 km from the Pacific Highway, and a 25-minute drive from the towns of Coffs Harbour and Bellingen (populations 24,581 and 3,038 respectively).



Figure 4-1: Aerial view of Bundagen looking towards the coast (Bundagen Community 2016a)

Bundagen co-operative consists of about 180 adult members, of whom about 110 live on the property. Including children and visitors, approximately 150 people were living on the land at the time of the 2012 internal census. The homes are arranged in 12 villages, clusters of three to six 'expanded' households which share some facilities such as toilets, laundries or kitchens between them (see Figure 4-2). The entire land is cooperatively owned, and the community governs itself based on a consensus-decision making process.

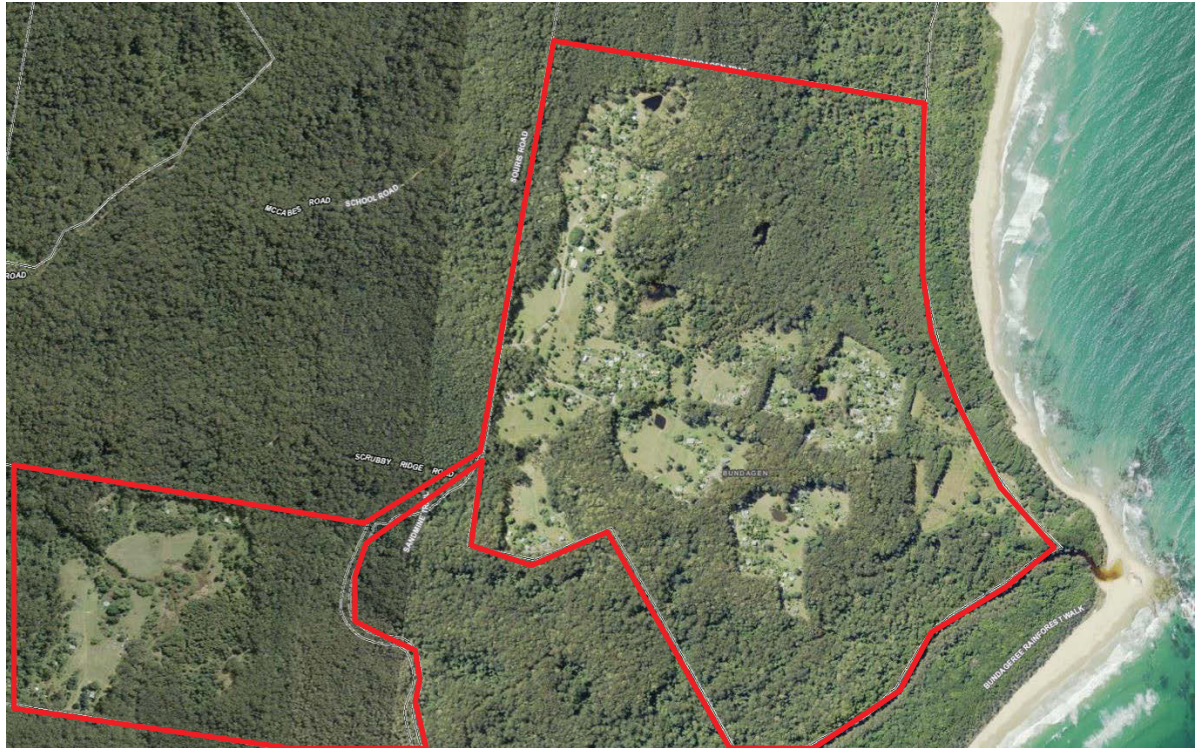


Figure 4-2: Aerial photo of Bundagen land (outlined in red) surrounded by National Park. The 12 villages are clustered within the cleared areas (source: SIXmaps - 14/08/2017).

The core community that established Bundagen was originally formed out of a protest movement to stop sand-mining and development in the local area. Bundagen describes itself as an intentional community with three guiding principles (Bundagen Community 2016a):

- social harmony;
- environmental responsibility;
- and economic independence.

Murundaka Cohousing Community

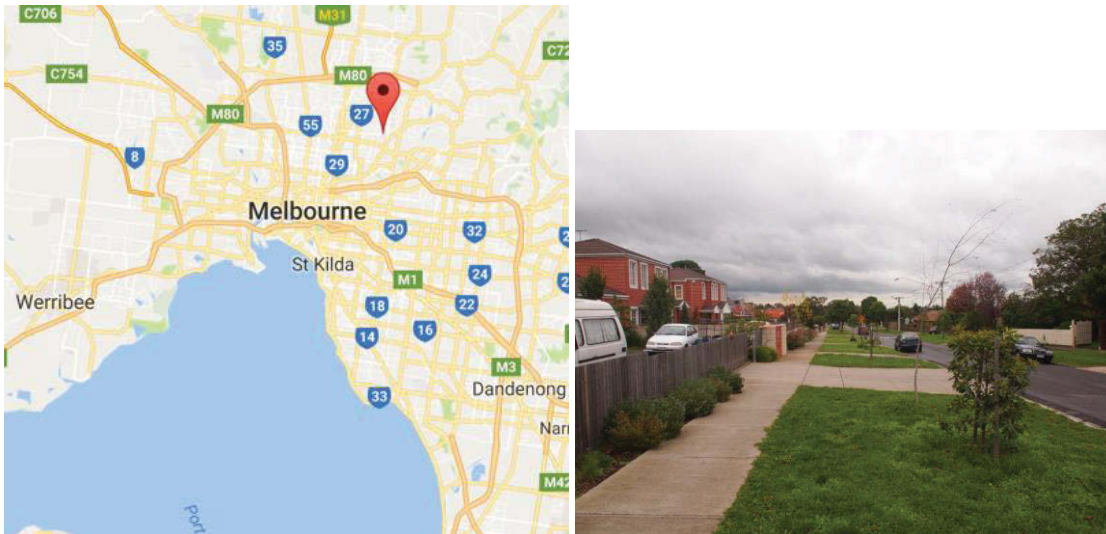


Figure 4-3: Murundaka Cohousing location in context with Melbourne CBD (Source: maps.google.com - 14/08/2017) and the suburban street frontage

Murundaka Cohousing Community is located in Heidelberg Heights, 16 km from central Melbourne and part of the Banyule City Council LGA. It is located on a street that feels typically suburban Australian, with two-lanes, wide grassed verges and footpaths on either side, mostly single storey detached red-brick houses with large front yards and some townhouse developments (See Figure 4-3). A small cluster of shops at the end of the street includes a newsagent, a milkbar, a takeaway shop selling fish 'n' chips and souvlaki, and a liquor store. The site is located one kilometre from Rosanna town centre and train station, and is serviced by a number of bus routes.

Murundaka was established in 2011 and members had been meeting regularly for the year before moving into the property in December 2011. It is legally structured as an all-rental housing cooperative. All residents are members of Earth Common Equity Rental Cooperative (Earth Co-op), a housing co-operative that first formed in 1986 and is one of more than a hundred Victorian housing cooperatives that operate under the Common Equity Housing (CEHL) program. Murundaka Cohousing Community consists of 20 households and approximately 35-40 community members. Of these 20 households, 18 are located within the cohousing development, and another two houses are located a couple of blocks away in the Heidelberg Heights area. These additional two households are long-term Earth Co-op properties and are also members of the Murundaka Cohousing Community.

The construction of the community involved the redevelopment of 3 suburban lots, previously consisting of detached suburban homes, one of which had been owned by Earth Co-op since 1990. In 2010-2011 the site was redeveloped for the Murundaka Cohousing Community. The design was based on cohousing principles, and has a large, centrally located common house with two

apartment wings (containing 18 apartments in total) clustered around the communal building (See Figure 4-4, with further diagrams provided in Appendix J). Figure 4-5 shows a before and after aerial view. A shared parking lot adjoins the street on the south-west corner of the block and the shared backyard is situated in the north-east corner. A gate connects the backyard to an adjacent public park.



Figure 4-4: Murundaka plan layout



Figure 4-5: Aerial view before and after the development of Murundaka. Before (left) showing three houses spread over separate blocks (Source: whereis.com 2/03/2016) and after (right) showing two apartment wings arranged around a central communal building and shared backyard (Source: maps.google.com on 2/03/2016)

Murundaka Cohousing Community describes itself as a housing cooperative and intentional community (Murundaka Cohousing 2016). The community vision is shown in Table 4-4.

Table 4-4: Murundaka vision statement (Murundaka Cohousing 2016)

Our Vision	
•	We are a cooperative community, relating to each other with respect, compassion and support.
•	We acknowledge the traditional owners on whose land we are living and working, and pay our respects to their Elders past and present.
•	We live sustainably: Conscious of ourselves, our local community, the world and our legacy for the future through our individual and collective actions.
•	We live with integrity: Balancing rights and responsibilities and behaving with authenticity.
•	We are self-reflective and outward-looking: Curious, courageous, collaborative, valuing the cohesion of the group and the wisdom of all.
•	We are part of our broader communities: Learning from and engaging in dialogue and action.
•	We have fun: Encouraging trust and harmony through play, spontaneity and creativity.
•	These statements represent our vision of what we want to be together and who we are already. We'll aim high and forgive each other when we fall short.

Table 4-5 provides a summary of the similarities and difference between the two case study communities.

Table 4-5: Similarities and differences between Bundagen and Murundaka

Community	Bundagen	Murundaka
Location	Urunga, NSW	Heidelberg Heights, Vic
Setting	Rural	Suburban
Founded	1981	2011
Land Purchased	Early 1980's	1990 (1st property) & 2006-9
Approximate resident population (2014)	148	35
Website	http://bundagen.com.au/	http://www.murundacohousing.org.au/
Land Ownership	Bundagen Cooperative	Earth Co-operative
Building Ownership	Mostly individual building ownership	Earth Co-operative
Membership roots	Anti-development protest movement	Sustainable living festival / Earth Co-operative
Regular Tours	Weekly open cafe	Annual open day, semi-regular tours and info sessions

Community	Bundagen	Murundaka
Buildings	New constructions (except common house)	New construction
Construction labour	Varied – mostly self-built	Constructed in 2010-11 by professional building company
Governance	Consensus with committees	Consensus with committees (Sociocracy)
Income Strategy	No coordinated income strategy	No coordinated income strategy
Food strategy	Varies by household from large proportion self-grown to largely reliant on mainstream food system	Aiming for 10% of food grown on site.
Electricity strategy	Disconnected from the grid. All households have solar and battery	Recently installed enough solar to power all homes, but export to the grid
Transportation strategy	Private vehicles externally Private vehicles, cycling and walking internally	Private vehicles, cycling and car-sharing
Water strategy	Off-grid – supplied by water tanks	Connected to water network – water tanks supplement garden water
Automobile ownership	Individual (some don't own)	Individual (some shared ownership)
Excrement disposal	Composting toilets	Connected to regular sewage network

4.4.4 Phase 2B: Case studies of grassroots sustainable housing initiatives projects

The focus of the case studies was first to identify the practices adopted/rejected by the community that contribute to improving the sustainability of consumption (of resources/materials) within the community. The information used for developing the case studies was derived from multiple sources to improve validity (Yin 2014). A range of data collection methods were employed, including: individual and group interviews, ethnographic observation, and documentary analysis. In addition, for the Bundagen case study an ecological footprint survey to collect data to calculate the community's ecological footprint was distributed to 22 households. Responses were received from 14.

Talking to individuals about their everyday practices is consistent with the tradition of SPT (Hitchings 2012), and the majority of empirical studies of social practices to date have indeed been qualitative (Kennedy et al. 2013). Qualitative techniques that entail personal interaction – e.g. interviews - can be particularly useful when researching alternative lifestyles, as they allow some form of relationship and trust to be established between the researcher and participants. Survey

research techniques have been noted to frequently be unsuitable when researching the alternative lifestyle movement, with participants often difficult to locate, unable to speak for the entire community, and often sceptical of or opposed to scientific method (Metcalf and Vanclay 1987, cited by Fisher 2004). The EF survey was targeted to households, not whole communities, and undertaken in conjunction with the case study visits, so was able to overcome some of these issues.

The goal during the case studies was to maintain an explorative stance to allow the members of the community to identify what they themselves considered to be environmentally 'sustainable' parts of their lifestyle. Any attempt to use practices as a starting point for environmental governance of consumption should focus on practices that are relevant and recognisable to the 'practitioner' (Spaargaren 2011). As Shove et al (2012, p.121) state when discussing what is, or is not, a practice, 'one response is to treat practices as anything that practitioners themselves take to be such' (p.121).

As previously discussed in Section 2.1.1, the consumption domains of food, construction/housing and transport have been identified as environmentally intensive areas in which households can exert influence (Lorek & Spangenberg 2001). Many SPT research projects have focused on specific practices or domains (e.g. thermal comfort (Gram-Hanssen 2010; Hitchings 2010; Strengers & Maller 2011) or energy demand management (Hargreaves, Nye & Burgess 2013)). This approach was considered, but not adopted, to avoid limiting the scope of practices open to discussion and aim instead for a holistic understanding of practices of importance in the community. Once particular practices, bundles of practice or domains were discussed, the aim was to increase the resolution of understanding by exploring the different elements of the practices discussed.

4.4.5 Phase 2C – Planning, housing and urban development professional interviews

The final part of the case study process was designed to contribute to the understanding of the influence of intentionally sustainable communities on a wider scale. The concept of the community members acting as policy-makers within the bounds of their community, with the ability to govern interventions in practice has already been raised, and will be considered more throughout the thesis. Research question 4 outlined a desire to understand how ISCs are influencing sustainable consumption on a wider scale. In part this question was explored through the resident interviews. During the interviews and subsequent analysis I realised that Murundaka in particular represented an initiative that could be described as intermediately situated (Boyer 2015) between the grassroots and the mainstream. The development and construction process engaged much more with actors from the mainstream housing regime (e.g. a community housing organisation, mainstream architects and builders, Federal Government funding) than was the case at Bundagen. It has also hosted a significant number of study tours from various development and planning professionals

since its formation. This presented an opportunity to understand the influence of Murundaka community in particular not just from the perspective of the community members, but also from development and planning professionals from the mainstream regime. These people held positions with the ability (to varying degrees) to intervene in practices of households, as policymakers, on a wider scale than was available to the Murundaka community members. To this end, interviews were conducted with six planning, housing and urban development professionals who had been involved in the development of Murundaka or visited on study tours in a professional capacity.

4.5 Methods

Interviews - Individual and group

The primary method for data collection was through individual interviews undertaken during a single field visit to each community. Semi-structured, guided questioning was used, which involves a 'set of broad-ranging questions derived from formal theory, previous research and interviewer's tentative theories arising from previous experience that need exploration' (Grbich 2013, p.7). This meant the interviews could be responsive to the particular areas of daily life that the participants identified as significant for practising sustainability to be explored (See Appendix D for question guide).

A group interview was also conducted at both communities, as this type of interview provides an opportunity to collect multiple views from within the groups. It also gives a better understanding of community dynamics in action.

Given that SPT decentres the individual, positioning them as 'carriers or hosts of a practice' (Shove, Pantzar, & Watson, 2012, p.7), there has been discussion in the literature about the appropriateness of interviewing individuals to understand practice. Essentially, the argument is that everyday practices are so routine and habitual that individuals are unable to describe them accurately or comprehensively (Hitchings 2012; Simpson 2011). Hitchings (2012) concludes that the different theoretical accounts of practices are at the very least equivocal about the appropriateness of talking to people about their practices, but are more likely to be supportive. He considers that 'those with more empirical predilections might take this as a green light for trying' (p.63). Reflecting on his own research experience, Hitchings (2012) recommends not discounting interviews for exploring practices, as they 'offer such an efficient means of understanding how it is to embody certain practices' (p.66).

Participant observation

Participant observation was a key method used to collect different types of data from the communities that could complement interview data and improve the validity of the research. Observation is a technique during which the researcher spends time in a setting with the opportunity to observe the action and interactions in an environment, 'to understand the meanings constructed of everyday life experiences' (Grbich 2013, p.9). Observational data is important in research focusing on practices, to allow access to certain "unspeakable" aspects' (Hitchings 2012, p.61) of everyday life, elements that participants may not be fully cognisant of, or that are difficult to uncover through talking. The rich context provided by conducting an interview that is accompanied by a house tour can be invaluable in gaining a more complete understanding of the practices in a household. Many communities have avenues for hosting visitors for short or long stays that can be used for observation and participation opportunities.

Document analysis – websites, newsletters, minutes

Document analysis primarily involved a review of the community websites (which were updated during the period of my research), an extensive selection of community newsletters and meeting minutes that were available, as well as policy documents such as by-laws and vision statements. In addition, a number of people have visited the communities and written blog posts, media articles or book sections that talk about their experiences. Analysis of these kinds of documents assisted in developing the background context for the research.

The various documents collected were first read as, and used to inform, general background of each community. During the analysis of case study data (including all interviews), themes were developed based on the key sustainability practices from each community (see Section 4.6 for further details). The document analysis followed an iterative process, with information from documentation used to first help identify key themes and then revisited to deepen the understanding of the emerging themes (i.e. to provide clarity about particular practices or policies, such as design guidelines, that were mentioned in the interviews).

At both Bundagen and Murundaka, interview participants were first recruited through a key individual within the community who had a reasonable understanding of the research aims. The Australian Intentional Communities Conference, as mentioned before, provided the forum for these initial conversations, which progressed through a number of subsequent interactions.

4.5.1 Bundagen - Case study methods

I spent six nights staying at Bundagen in March 2014. I was a guest of Jamie and Rejane, staying in the Hamlet village. I first met Jamie at the Australian Intentional Communities Conference in 2013.

They were active members of the Bundagen Community, with Rejane having at various times been the treasurer and secretary of the Cooperative.

Participant observation - 2014

Whilst staying at Bundagen, the primary focus was to carry out the interviews which will be discussed below. However I also tried to participate in various activities occurring within the community during that time, to gain a different perspective on everyday life. I arrived on a Tuesday during the weekly 'café' that was run from the main community house. This coincided with a community meeting, in which I was introduced to the members in attendance and observed the procedures and processes of discussion and decision-making. Towards the end of the week I participated in the community Landcare group, run by one of the residents, which had grant funding to remove weeds from the National Park along the Bundagen headland. Community members participating in the group earned credits towards their annual membership levy. As well as participating in these more formal activities, I spent my free time walking and cycling around the community, taking photos and talking with my hosts and visitors that stopped by for social visits or to discuss community matters. This included a long chat with a young couple from Belgium who were spending a month touring Australia visiting intentional communities and wanted to find out more about Bundagen. Some mornings I would go for a surf at the community beach, sometimes surfing with one or two other members of the community, and on Friday afternoon I joined many residents for their regular end of the week gathering at the beach.

Ecological footprint survey

I undertook an ecological footprint analysis of the Bundagen community as part of the research process. The data for the analysis was gathered by a survey voluntarily completed by Bundagen households. A copy of the survey is attached as Appendix E. The survey was modelled on one used by Sherry (2014) for his doctoral research project exploring the ecological footprints of a number of US-based intentional communities. The survey collected data in seven categories i) home energy use, ii) transportation / travel, iii) food consumption, iv) goods and consumables, v) waste disposal, vi) house building materials, and vii) water usage. The residents were informed of the opportunity to participate in the survey at a community meeting, and the survey forms (hard or softcopy) were distributed before my arrival. While I was at the community I made myself available to answer questions about the survey if anyone had any. I received responses to the survey from 14 households, representing 28 people at Bundagen. This was out of a possible 95 households, or 148 people living on the property in 2012; a response rate of 15% of households, or 19% of residents of Bundagen being captured in the survey (based on 2012 figures for Bundagen).

Interviews – semi-structured

I carried out interviews with eight community members at Bundagen and recorded a conversation between my host and a young couple from Belgium who were visiting intentional communities in Australia with the intention of moving into one. The interviews lasted between 45 – 90 minutes and were held in the homes of the interviewees. Frequently I was given a house tour during or after the interview. I recruited participants by calling everyone who had requested an EF survey or expressed interest in my research to my hosts. I would also mention the group interview session to people when I spoke with them on the phone or in person (See Table 4-6 for a list of participants in both group and individual interviews). There was a large degree of cross-over between survey and interview participants, which allowed some of the interviews to be interpreted in the context of the EF responses.

One group interview was also conducted at Bundagen at the end of my stay, with six attendees for the duration of the interview. It lasted approximately 90 minutes, and was held on the verandah of the main community building. Some of the attendees were people that had already been interviewed, while others only attended the group discussion. Participants were recruited by flyers put up around the community and through the other contacts mentioned above. The structure for the group interview was largely the same as for the individual interviews, and it was also semi-structured. The benefit of holding the group interview after all the individual interviews were completed was that I already had a detailed understanding of the workings of the community and could use this interview to focus more on aspects of the community that I had noticed, but not properly discussed.

Table 4-6: Research participants from Bundagen, indicating nature of the participation in the research and length of involvement with the community.

Name	Year joined Bundagen	Years at Bundagen	Individual interview	Group interview
Allan	1983	34	X	
Bill & Janelle	1981	36	X	
Chris	1981	36	X	
Jane	2005	12	X	
Sandy	2009	8	X	
Rejane & James	1991	26	X	
Mick & Teresa	2004	13	X	X
Phil	2007	10		X
Jenny	1984	33		X
Trevor	1984	33		X
Bob	1984	33		X
Greg	1981	36		X

Document analysis

The types of documents collected for analysis included the website (Bundagen Community 2016a), by-laws (Bundagen Community 2015), a selection of past newsletter hard copies that were made available to me during my visit as well any other incidental information I could find online.

4.5.2 Murundaka - Case Study Methods

I visited Murundaka on three separate occasions during my research. The first for a few hours in 2013 after the Australian Intentional Communities Conference. There I spoke with Giselle, one of the founding members, about the possibility the community would take part in my research. I stayed for five nights in 2014, when I conducted all the interviews with Murundaka residents. Finally, I stayed for another two nights in 2015 whilst interviewing the development and planning professionals who had interacted with Murundaka.

I did not conduct an ecological footprint survey and analysis with Murundaka, for a couple of reasons. Firstly, Bundagen community members wanted to determine the EF of the community, so performing this analysis was influential in gaining access to the community, whereas there was no such condition with Murundaka. An EF analysis was still considered, however it became clear during discussions with the Murundaka community that they had previously undertaken an audit comparing energy usage with surrounding communities. Though this is different from an EF analysis, the audit provided an additional comparison point that reinforced the assumption that Murundaka residents were living in a more sustainable manner than mainstream Australian households. Finally, Murundaka had been very open to visitors and researchers since its formation, so there was a risk that community members would develop 'research fatigue'.

Participant observation – 2014 & 2015

During both the longer stays, I was hosted in one of the community's shared guest rooms. A communal welcoming dinner had been arranged for me on the first night I arrived, prior to the group interview. I participated in one other common meal during my stay, contributing more by helping to cook that time. In between interviews, I took photos of the community, exploring the local neighbourhood with some of the residents or just relaxing in the common house.

Interviews

I carried out nine semi-structured individual interviews with community members at Murundaka. Each lasted between 30 – 90 minutes, except for one which took 15 minutes. All bar one were held in the common house, two included an apartment tour and I had a number of tours around the common facilities. As mentioned, potential participants were recruited through key contacts prior to my arrival, and interviews were arranged either on the first night or incidentally throughout my stay. See Table 4-7 for the list of participants in both group and individual interviews.

One group interview was also conducted at Murundaka, however this time it was held at the start of my visit. It took place at the common house dining table following a welcome dinner for me. As with Bundagen, I followed a similar question structure to the individual interviews. However, as this one was held at the start of my visit, it was more exploratory, providing a chance to understand the breadth of different practices more than the details. Some aspects of the group dynamics stood out. There were clear leaders who were comfortable talking (especially about sustainability-based issues) in front of the group as they'd worked in the area for a long time, whereas newer residents, those who were less outgoing, or had less professional knowledge were hesitant to speak in front of the group. I interviewed most of the people who came to the group dinner and discussion during the research, including both the outspoken and quieter individuals.

Table 4-7: Research participants from Murundaka, indicating nature of the participation in the research and length of involvement with the community.

Name	Year moved to Murundaka	Years at Murundaka	Individual interview	Group interview
Giselle	2011	6	X	X
Heidi	2011	6	X	X
Jude	2011	6	X	X
Jo	2013	4	X	X
Sophie	2013	4	X	
Mikoto	2011	6	X	
Iain	2011	6	X	X
Delphine	2011	6	X	
Chris	2011	6	X	
John	2011	6		X

Document analysis

The types of documents collected for analysis included the website (Murundaka Cohousing 2016), a number of community produced posters about the Murundaka vision, sustainability goals and general cohousing information, past newsletter hard copies that were made available to me during my visit, a submission prepared for the local government sustainability awards (Foyster 2014b) as well as any other incidental information I could find, such as the blog of one of the founders (Wilkinson 2016).

4.5.3 Planning, housing and urban development professional interviews

The interviews with professionals who had interacted with Murundaka were carried out in early 2015, and one in early 2017. The details of these professionals were given to me by Heidi and Giselle at Murundaka, who provided lists of people who had visited for study tours, or had some kind of professional involvement with the community. I approached them directly about being interviewed

for the doctoral research. Interviews were conducted in person (except for one by phone), at the place of work of the interviewee (except for one in a café). They were semi-structured, but more targeted in their approach than the case study interviews, specifically exploring their interaction with Murundaka and how their involvement with the community may have influenced future actions. Some of the interviewees requested anonymity, so the names of all the interviewees have been anonymised and their positions generalised. These generalised details are shown in Table 4-8.

Table 4-8: Planning, housing and urban development professional interview participants

Organisation	Name	Position
Local Council	Professional 1	Strategic Planning
Local Council	Professional 2	Council officer
Local Council	Professional 3	Strategic Planning
Local Council	Professional 4	Land Management
Local Council	Professional 5	Housing Strategist
Housing provider	Professional 6	Development manager

4.6 Data Analysis and reporting

All interviews were recorded into digital audio format, as were reflections and thoughts during the visits. Interviews were transcribed into digital word processing documents. See Appendix I for an extract of an interview transcript.

The interviews and observation notes were subjected to initial coding using NVIVO, the qualitative data analysis software. Coding permits data to be 'segregated, grouped, regrouped and relinked in order to consolidate meaning and explanation' (Grbich 2013, p.13). There was some initial structural coding to group responses by research question. Following that, high-level theoretical codes drawn from practice theory (e.g. practices, elements, circulation) and the New Economics indicators for sustainable consumption were used to guide the next pass of coding. Within the structure of these high-level frames, a 'grounded' approach (Glazer, 1998) to coding was taken, with codes related to specific practices and elements added and consolidated. As coding progressed, the use of practice theory based codes proved most useful and this became the focus, rather than the New Economics indicators. Codes were used to represent different household practices, as well as various elements of practice that were brought up in multiple contexts. New themes that emerged were collected in a section for 'grounded' codes, and if they developed sufficiently were also incorporated into the analysis.

The first pass of coding with NVIVO was used to develop a thematic coding structure based on different practices and elements of meaning, material and competence. After this first pass, I

stopped using NVIVO and changed my analysis approach to complete the interview analysis, to develop a richer understanding of the data based on the identified themes. This involved multiple readings of the interview transcripts in a process of continuous meaning making and progressive focusing (Srivastava & Hopwood 2009). The practices that emerged from the analysis were grouped into larger domains of practices (Spaargaren 2011). Ethnographic narrative accounts and inductive content analysis were employed so as to maintain the richness of the data. I returned to the data many times during the writing process to verify the conclusions I was drawing.

4.6.1 Case Study Reporting

Chapters 6 and 7 provide in-depth description and analysis of the sustainability-related practices of the two case studies. These two chapters focus on the practices and elements that community members discussed as helping them to live in a more environmentally sustainable manner. They are structured around major domains of practices, which have a clear relation to the priority areas identified in Section 2.1.2. The first two sections explore practices related to the creation and management of the built environment: *creating home and community*, and *governing home and community*. These encompassed both the theoretical and physical creation of a community, and the ongoing practice of communal living. The second section considers a wide variety of practices associated with *dwelling the house*, which largely consists of practices related to energy using products within the home, and dealing with waste in various ways. The third section explores practices related to *food provisioning and consumption*. The final section of the chapter dealing with Murundaka (Chapter 7) considers *mobility and transport* related practices, which were discussed by the Murundaka residents. This domain is not covered for Bundagen (Chapter 6) as the mobility practices within the community generally resembled those of any rural Australian community, being largely car-based, and were not really discussed by the residents of the community.

The case study chapters also draw upon the interventions in practice framework introduced in Chapter 3 to contribute to answering the sub-questions of Research Question 3 (see Section 4.3.1). Through the analysis it became clear that a number of distinct practices are performed at Bundagen and Murundaka, and that whilst they are not unique to those communities, they are uncommon in mainstream neighbourhoods. Some of the distinct practices from the communities are directly linked to a reduction in resource consumption and/or a reduction of environmental footprint. Others, whilst not directly linked to resource consumption or environmental impacts, were significant in the function of the community, and were either significant in shaping the way practices interlocked within the community and 'sustainable elements' were able to circulate, or had what Spaargaren (2011) termed 'eco-innovative potential'.

In both chapters, a summary table is provided for each domain outlining the practices that are discussed for that domain. For each practice, elements are outlined which were discussed as key to the sustainability of that practice, or key to differentiating that practice entity within the community from more mainstream arrangements are outlined. The table identifies the type of intervention in practice that most closely described the manner in which each practice has become more sustainable and differentiated from 'mainstream' practices. Finally, the sustainability impact of this practice is noted, with reference to the sustainable consumption frameworks of both Seyfang (2009) and Schanes et al (2016) discussed in Section 2.3. In addition to the table, the summary also includes a more in-depth discussion of the most distinctive practices within each domain. The tables provide a robust and structured analysis of the practices within the intentional communities, and build on previous use of such tables of practices and elements by Riedy and Ross (2012) and Daly (2015).

Throughout the case study chapters, the quotes are attributed to the interviewees by indicating their name and the number of years since they joined the community. As per the consent agreement with the interviewees, real names are used in the majority of cases, except when consent was not given. In these cases, a pseudonym has been used.

Once draft case study chapters were prepared, a copy was sent to all of the interview participants, or in some cases for Murundaka to one of the main contacts for distribution to the interview participants. The whole chapter was provided to give participants context, and any sections where they were quoted or referenced were highlighted for ease of review. Participants were asked to comment on how their words had been interpreted to see if the interpretation was consistent with their own experience, and if they had any reflections that arose from reading the chapter. This process is consistent with Yin's (2009) third recommendation for ensuring the validity in case study reporting. Whilst not everyone responded, more than half of interview participants gave some kind of reply. Some minor comments, and interesting reflections were received from both communities, and these have been incorporated into the text.

4.7 Ethical considerations

Interview participants were provided with information about the research project prior to agreeing to participate (see Appendix B). They signed consent forms prior to formal interviews, which were developed with the UTS Human Research Ethics Committee (see Appendix C for example of consent form). All participants were given the option of anonymity prior to being interviewed, with the vast majority of community residents choosing to use their real names – pseudonyms have been used where required. Whilst writing up the thesis, I have reflected upon whether I should use

pseudonyms for all participants regardless, given that the research is concerned with personal and sometimes private practices. Publications during the research period (e.g. Daly (2015)) removed names to keep the option of across-the-board anonymity open. In the end, I decided to use the names as provided to me during the interviews, for three reasons. Firstly, every participant who has been mentioned by name or quote has been provided with a copy of the relevant case study chapter to review, and if desired, request anonymity. In the cases where this has occurred I have happily complied. Secondly, as all participants have now effectively chosen to have their real names associated with this research, there would be some ethical implications in deciding not to use them. It is quite possible that participants are happy to have their identity public to make it easy for people to inquire and learn more about their specific initiatives. Finally, in a related point, the case study chapters developed to include short histories of the formations of the communities. Whilst these aren't the focus of the chapters, so aren't comprehensive, they still represent stories that the community members have the right to be associated with unless they express a desire to the contrary.

4.8 Summary

This chapter has established the empirical research design for this multiple case study investigation of intentionally sustainable communities. It detailed the process of arriving at the research questions based on the overarching research aims. The review of the literature identified four broad objectives, and identified social practice theory as a promising theoretical framework to structure the research inquiry.

The two-phase research methodology used was described, first using a systematic review, and then the case study methodology. The process used to select the case studies has been explained, the rationale for the final choices outlined, and the two case study communities – Murundaka Cohousing Community and Bundagen Cooperative Community – introduced. Finally the approach used in the analysis of data collected was described.

The following chapter (Chapter 5) contains the details and results of phase one of the research: the systematic review of quantitative measures of environmental impacts of ecovillages and cohousing communities.

Chapter 5. Quantifying the environmental impact of ecovillages and co-housing communities

5.1 Introduction

This chapter presents the systematic literature review of the ecological and carbon footprints of intentional communities. This review was undertaken to address the first research question and gain a better understanding of the extent to which intentional communities are making progress towards environmental sustainability goals. The systematic literature review has already been published in a refereed journal, and the publication is included verbatim in this chapter. The publication is included in its published form because it is largely a stand-alone piece of research within the thesis. Nevertheless, the opening sections of the paper do cover some of the same ground as earlier chapters. The repetition is minimal and offset by the value of including the self-contained publication. Following the publication, this chapter includes a summary of the analysis and results from the ecological footprint survey conducted with Bundagen.

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Quantifying the environmental impact of ecovillages and co-housing communities: a systematic literature review

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ABSTRACT

Many intentional communities worldwide, such as ecovillages and co-housing communities, have explicit goals of living in an environmentally sustainable manner, and are taking conscious steps towards these goals in response to the widely discussed unsustainability of the global sociotechnical system. There are numerous claims from researchers and community members, in the academic and grey literature, that intentional communities are making significant improvements towards sustainability goals, particularly in terms of environmental impact. However, actual measures of progress, with evidence supporting these claims, are relatively scarce. This paper presents the findings of a systematic review of quantitative studies of the environmental impact of intentional communities, including comparisons with relevant “mainstream” communities. The review focused on the two indicators that are most commonly reported in studies of the impact of intentional communities – the ecological footprint and the carbon footprint. This review was undertaken as there is a lack of literature reviews that comprehensively compile existing quantitative studies about intentional communities. In total, the review identified 16 separate studies covering 23 communities and 30 footprint measurements, with publication dates ranging from 2000 to 2014. This is a greater number of studies than in any other literature review of this topic. Taken as a whole, these compiled studies provide strong support for claims of greater environmental sustainability within these communities, and reinforce the need for greater research and exploration of the role sustainability-oriented intentional communities can play in the transition to more sustainable sociotechnical systems.

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footprint

Introduction

The question of how to achieve sustainability at a community scale is the subject of ongoing discussion in the literature (Blay-Palmer 2011). Recently, there has been a renewed focus on the potential of civil society-led sustainability innovations, often grouped under the phrase “grass-roots innovations” (Seyfang and Smith 2007, Smith and Seyfang 2013), and there is evidence that cohesive community-based action can deliver more sustainable lifestyle practices (Middlemiss 2011). In particular, the literature regarding intentional communities, such as ecovillages and co-housing communities, contains frequent claims of greater sustainability (especially with reference to having a reduced environmental impact) when compared with similar mainstream communities (Williams 2005, 2008, Assadourian 2008, Lietaert 2010, Marckmann *et al.* 2012, FIC 2015, GEN 2015).

An intentional community is a broad term that can be defined as a group of people who have “voluntarily come together for the purpose of ameliorating perceived social problems or inadequacies” (Metcalf 2004, p. 9). This paper presents a systematic review of existing studies that have quantitatively assessed the environmental sustainability of intentional communities. This review focused on the environmental aspects of sustainability, and used ecological footprint (EF) as a primary indicator, and carbon footprint (CF) as a secondary indicator. The systematic review was undertaken to understand the extent to which the environmental part of sustainability claims can be justified, and provide recommendations for further in-depth research.

The sustainability problem

There are many intentional communities around the globe guided by principles of striving to live in a manner that is environmentally, socially, economically, and often spiritually sustainable. Ecovillages, for example, are described by the Global Ecovillage Network as communities endeavouring for lifestyles that are “living models of sustainability, and examples of how action can be taken immediately” (GEN 2015). These aims have arisen partially in response to the steadily increasing unsustainability of human activities and their impact on the planetary system (Steffen *et al.* 2007; Rockström *et al.* 2009, Stafford Smith and Brito 2012, WWF 2014).

The impact of consumption on the planetary system has been described as “... like the proverbial 800-pound gorilla in the living room that almost everyone chooses to ignore” (Princen *et al.* 2002, p. 2). This is changing, and academic research has identified the impact of consumption, including individual consumption practices and choices, as one of the major drivers of environmental pressures, particularly in the industrialised world (Princen *et al.* 2002, Jackson 2009, WWF 2014). Studies of general populations have shown that a major driver of society’s environmental impact is individual or household consumption (Spangenberg and Lorek 2002, Hertwich and Peters 2009). The individualisation of responsibility for environmental problems is problematic, given the way established systems, institutions, and political forces shape and constrain individual decisions (Maniates 2001). Nevertheless, everyday actions such as heating and cooling homes, travelling to and from work, buying and cooking food for dinner, and other household consumption practices are directly linked to the environmental impacts from the global production–consumption systems.

Confronted by what is a very complex problem, intentional communities represent potentially important experiments in developing more sustainable lifestyles and consumption patterns. They are experimental niches, and as the grass-roots innovation agenda highlights, civil society niches can play an important role in successful sociotechnical transitions to more sustainable production–consumption systems (Maniates 2001, Seyfang and Smith 2007). The communities covered in this review reduce the impact of everyday consumption practices in a wide variety of ways, whether by using sustainable materials (Sherry 2014), sharing spaces to minimise floor space (Williams 2005), growing food locally and eating vegetarian diets (Tinsley and George 2006), sharing cars (Meltzer 2005), or other alternative practices.

Intentional communities with ecological principles

The review presented in this paper focused on those intentional communities in which reduction of environmental impact, and living in a more sustainable manner, is an accepted goal. As other authors have discussed, there is a great deal of ambiguity and slippage in the terminology and definitions when referring to intentional communities (Jarvis 2011). In practical terms, the communities considered in studies used in this review fall within the scope of the terms ecovillages and co-housing communities. Ecovillages are communities consciously seeking environmental sustainability, along with social justice, equality, and peace (Metcalf 2004). The Global Ecovillage Network website defined an ecovillage as “an intentional or traditional community using local participatory processes

to holistically integrate ecological, economic, social, and cultural dimensions of sustainability in order to regenerate social and natural environments” (GEN 2015).

Co-housing is an adaptable concept that is described as “a type of intentional, collaborative housing in which residents actively participate in the design and operation of their neighborhoods” (CAUS 2014). It is generally understood as referring to an urban form of intentional community (Metcalf 2012). Whilst primarily focused on creating more communal living spaces in order to increase social interaction, an increasingly large number of co-housing communities are striving to address issues of unsustainable living (Meltzer 2005, Williams 2005, Marckmann *et al.* 2012). Along with ecovillages, co-housing communities have been described as growth areas in communal living (Metcalf 2001). Other types of intentional communities include residential land trusts, income-sharing communes, student co-ops, and spiritual communities (FIC 2015). Communities that have goals of reducing environmental impact generally refer to themselves as co-housing or an ecovillage, so these two terms were the focus of this review.

Research into intentional communities has to date been heavily skewed in favour of social science-based research. Wagner (2012) conducted a broad review of all academic literature on ecovillages and ecovillage-related aspects of other intentional communities, and identified 59 studies, of which 49 took a social science approach and only 10 took a natural science approach. These categorisations were determined based on the thematic concerns of the studies. Of those 10 that used a natural science approach, only four studies addressed issues of ecological sustainability through quantification of EFs or energy consumption. Wagner also found that studies that directly compared ecovillage communities with other forms of habitation have been scarce. Wagner’s paper was designed to provide an overview only, so the results of these studies were not presented or discussed, and whilst the paper aimed to be a comprehensive review of the state of research, Wagner himself acknowledged it was likely incomplete.

This review identified few existing literature reviews of quantitative sustainability studies of intentional communities, and none that claimed to be comprehensive. The majority of literature reviews, other than Wagner’s (2012), have included a small number of quantitative studies of ecological sustainability (generally 2–3). Of these, the most comprehensive was Giratalla (2010). A common conclusion of these reviews was that only a limited number of studies have sought in some way to quantify the level of sustainability or environmental performance achieved by ecovillages and co-housing communities (Moos *et al.* 2006, Marckmann *et al.* 2012), and that comparisons with mainstream communities have been rare.

Measuring sustainability

Whilst a quantitative measurement of ecological sustainability is a difficult concept that can be interpreted in different ways, ecological footprinting is one measure widely accepted as a useful and rigorous assessment tool (Singh *et al.* 2009, Wiedmann and Barrett 2010, Čuček *et al.* 2012). An EF assessment combines various environmental impacts (categories of impacts are often divided into food, home energy, transport energy, and waste disposal) into a common metric to facilitate comparisons of different projects over time and space, and against ecological limits. EF analysis is expressed in terms of equivalent land area (global hectares or gha), which represents the productive area required to provide the renewable resources and absorb the waste for a given human population over a certain time period (usually a year). The EF allocates the environmental pressures and impacts to the consumer, community, or population that consumes the final goods and services (Barrett *et al.* 2005). It is, therefore, an appropriate methodology for assessing the environmental sustainability of intentional communities.

Whilst there are acknowledged limitations and methodological issues with the concept of EF (e.g. Moffatt 2000; Barrett *et al.* 2005), it has been adopted by an ever-growing number of government authorities, agencies, organisations (corporations), and communities (Barrett *et al.* 2005) and has been described as the best example of this kind of aggregated metric of ecological performance

(Moos *et al.* 2006, Hurley *et al.* 2007). It has proved effective at highlighting the unsustainable personal consumption patterns of a large portion of the global population (Rees 2008).

Moos *et al.* (2006) and others (Hunter *et al.* 2006, Klinsky *et al.* 2009) found that whilst EF methodology had been extensively applied at international, national, and regional levels, and to individuals, its applicability at mid-scales (i.e. household to regional/subnational level) was less explored. At this scale of assessment, there are two main methods of EF analysis: compound and component. The compound method is most commonly used to determine national EFs, based on data from national consumption statistics (e.g. WWF 2014). Smaller scale compound EFs (e.g. local or regional) can be determined by comparing local or regional consumption data with national averages to modify the national EF (Klinsky *et al.* 2009). Whilst this can work well at administrative scales where consumption statistics are collected, such as at the city or regional level, detailed local or regional data may not be available when working at the scale of an intentional community. In this case, the component method may be preferable, and was the method favoured by the studies found in this review.

The component method is a “bottom-up” approach that combines specific locally obtained consumption data (such as yearly driving distance) with pre-calculated life-cycle data about an impact appropriate for a certain region (e.g. impact per passenger km) (Chambers *et al.* 2000). Data from most forms of consumption (e.g. food, direct and indirect home energy, and transport energy), production of waste, and conversion of productive land to built-up land are combined to determine an overall footprint (Hunter *et al.* 2006). The component method is well suited to subnational contexts, such as households and intentional communities, although the accuracy of results depends on the quality of local consumption data as well as life-cycle modelling of impacts (Lenzen and Murray 2001).

CF is another commonly used metric. Although not as holistic as EF, it is the largest single component of the global EF, accounting for 53% of the global EF¹ (WWF 2014). Due to its strong relationship to EF, and the number of studies that have used CF as a sustainability metric, CF studies have been included in this paper. It is recognised that “carbon footprint” is a somewhat ambiguous term that can be used in different ways and expressed in a number of units, from tonnes of CO₂ (tCO₂) or tonnes of CO₂ equivalent² (tCO₂-e), to gha, as a component of overall EF. Wiedmann and Minx (2008) discuss the ambiguities of usage in depth and propose a definition. However, for the purposes of this review, it is enough to note that the methodologies of calculation may differ between studies, which makes the comparisons of absolute figures potentially problematic.

Despite the complexities identified, EF and CF are both widely accepted, rigorous, and well-understood tools for the assessment of sustainability, and hence were chosen as appropriate focus indicators for this review. A summary of the number of studies reviewed that used these metrics is presented in the Results section.

Methodology

A systematic review exploring the EF and CF of intentional communities was undertaken. For this review, searches were carried out using a purely academic search tool (Scopus), grey literature search (Google Scholar), and practitioner networks. Sources considered included academic literature, as well as grey literature considered to be of a credible nature, for example professional reports and internal community reports. The grey literature was an important source of new data for this review.

The systematic review process followed is presented in Figure 1. Scopus and Google Scholar were the online literature databases used for the searches. These were used to provide comprehensive access to both academic and non-academic literature. The same search terms were used in both search engines (see Table 1). In addition, the reference lists of relevant papers were extensively reviewed for new studies. Intentional community researchers and members of community networks were also consulted regarding the review in an attempt to uncover studies that may not be publicly available.

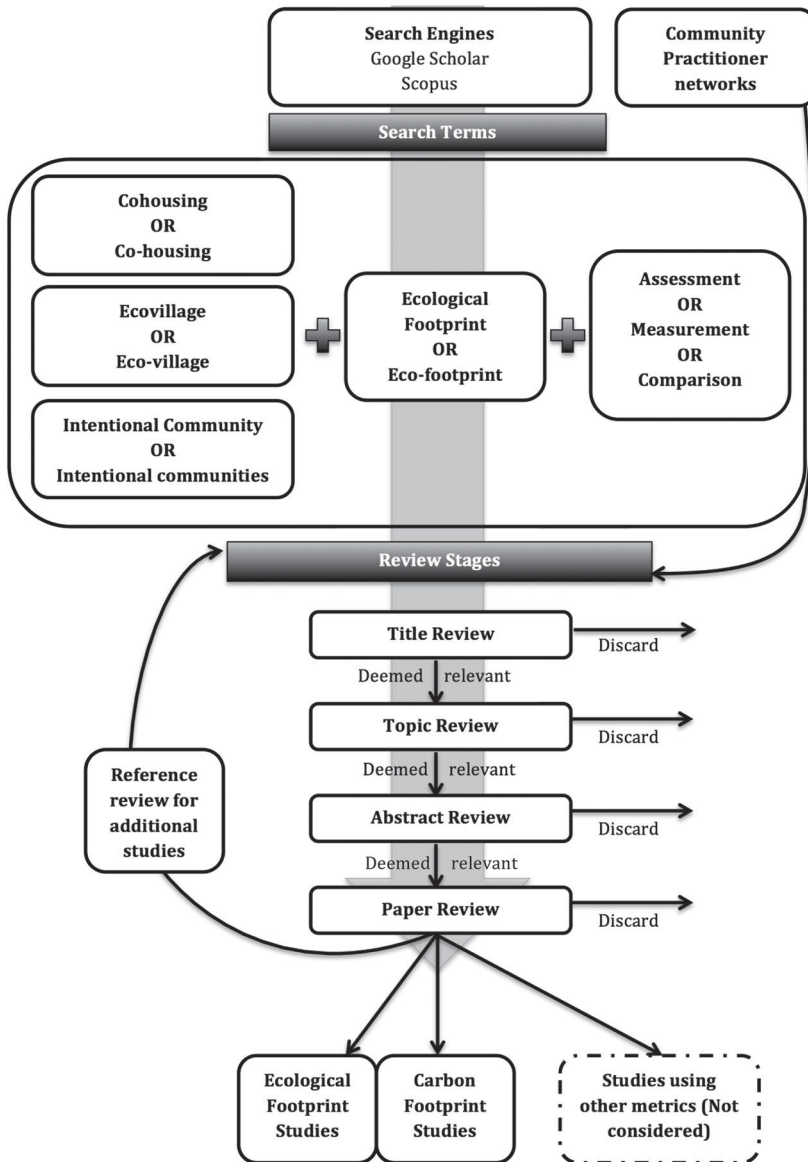


Figure 1. Visual representation of the systematic review process.

The search terms used for the review were a combination of each of (1), & (2) & (3):

- (1) intentional community, intentional communities, cohousing, co-housing, ecovillage, eco-village, in combination with,
- (2) ecological footprint, eco-footprint, carbon footprint, in combination with,
- (3) assessment, measurement, comparison.

These search terms were chosen as the most likely to return relevant results. To test the effect of search terms (3) on the results, the searches were also performed in Scopus using only combinations of terms (1) and (2).³ A small number of additional search results were returned (<10), but did not return new, relevant studies. Similar tests were not performed in Google Scholar as the number of

Table 1. Overview of the search results.

Search string	SCOPUS		Google Scholar	
	Found	Used	Found	Used
("Intentional community" OR "intentional communities)" AND ("ecological footprint" OR "eco-footprint)" AND ("comparison" OR "assessment" OR "measurement")	8	1	211	4
("Ecovillage" OR "Eco-village)" AND ("ecological footprint" OR "eco-footprint)" AND ("comparison" OR "assessment" OR "measurement")	37	2	465	7
("Cohousing" OR "Co-housing)" AND ("ecological footprint" OR "eco-footprint)" AND ("comparison" OR "assessment" OR "measurement")	10	0	270	3
("Intentional community" OR "intentional communities)" AND ("Carbon Footprint)" AND ("comparison" OR "assessment" OR "measurement")	1	0	130	0
("Ecovillage" OR "Eco-village)" AND ("Carbon Footprint)" AND ("comparison" OR "assessment" OR "measurement")	12	0	365	0
("Cohousing" OR "Co-housing)" AND ("Carbon Footprint)" AND ("comparison" OR "assessment" OR "measurement")	5	0	149	1

results was much larger, and Google Scholar automatically returned results that would have included possible synonyms of the search terms from item (3).

The number of results returned from these searches, and the number of studies used from the results are summarised in Table 1. Many of the studies used were returned in multiple searches, and some of the studies in the used column are not the final study referenced in the Results section of this review, but the study that cited the original work included in this review.

The criteria used to determine which studies to include and exclude from the review are summarised in Table 2.⁴ The general philosophy of this review was to include boundary cases wherever justifiable.

The next section presents a summary of the results of this review of studies that quantitatively measured the environmental impact of ecovillages and co-housing communities, using EF and CF as metrics.

Results

Overview of studies

The findings of this systematic review are summarised in Tables 4 and 5. In total, 16 separate studies covering 30 footprint measurements of intentional communities were included in this paper. Some

Table 2. Criteria for inclusion in or exclusion from the systematic review.

	Included	Excluded
Community purpose	Communities with reducing environmental impact as a vision, goal, aim, or principle	Spiritual, religious, economic, political intentional communities with no explicit environmental aims
Development process	Bottom-up, grass roots-initiated communities, formed and created by members	Top-down, master-planned, or developer-led "eco-developments", created by government departments or housing corporations
Assessment metric	Ecological footprint (gha/pp) Carbon footprint (tCO ₂ /pp/yr or tCO ₂ -e/pp/yr)	Energy consumption Electricity consumption Water consumption Floor space ratio Other study-specific metrics
Method of publishing	Academic literature Academic reports PhD & Master's theses Professional reports Community reports Detailed summaries of reports on community websites	Presentations Abstracts of presentations Undergraduate & honours theses
Date of studies	All dates up until the end of the review period	Published after the review period (June 2015)



Figure 2. Overview of types of studies consulted.

communities were assessed in multiple studies, so in total 23 unique communities were investigated by the studies covered. This is a far greater number of studies than previously mentioned in the literature. Wagner (2012), in an extensive review of research on ecovillages previously referred to in this paper, identified two studies measuring EF or CF (Simon *et al.* 2004, Tinsley and George 2006): one measuring energy consumption (Brown 2004) and one that used a customised measure of ecological sustainability (Bissolotti *et al.* 2006). Giratalla (2010) identified three studies looking at EF or CF (Haraldsson *et al.* 2001, Moos *et al.* 2006, Tinsley and George 2006) and one that measured various forms of pro-environmental behaviour change (Meltzer 2005). From these reviews, only five of the studies considered EF and CF, and therefore met the inclusion criteria for this systematic review.

The studies found in this review were categorised according to the type of work, as illustrated in Figure 2. The largest proportion of the studies were specifically prepared footprint reports, with one-third prepared by academic institutes (3), one-third from other professional agencies or consultancies (3), and one-third prepared internally by the community (or the engagement of a consultant was not explicitly mentioned in the report). The larger number of studies found in this review, compared to previous reviews, can partially be explained by a greater focus on the grey literature, partially by the presence of new studies published since the last reviews, and partially by the systematic nature of this review.

Geographically, the communities in the published studies identified were concentrated in Europe (the UK, Sweden, Germany, Finland, Denmark, Ireland, and Hungary) and North America (the USA and Canada), with one study in Japan. Whilst not unexpected, as there are large numbers of well-established communities on these continents, the lack of quantitative studies from Oceania was interesting, given the long history of intentional communities in Australia and New Zealand.⁵ Studies in languages other than English that appeared likely to contain useful results were translated using online tools (e.g. Samuelsson 2001), or an English summary of the results was obtained (e.g. Simon *et al.* 2004).

Metrics used

The EF was the most commonly used metric of sustainable performance. CF was also used frequently, whether referring to CO₂ emissions only, or greenhouse gas emissions expressed as tonnes of CO₂

Table 3. Summary of metrics used in the studies reviewed.

Metric used	Number of studies	Number of communities
Ecological footprint (gha/pp)	10	12
Carbon footprint (tCO ₂ /pp/yr)	5	9
Carbon footprint (tCO ₂ -e/pp/yr)	2	3

equivalents (see Table 3⁶). Other metrics observed in this review included energy, electricity, and water consumption. Although not as holistic, these other metrics can to some extent be used as measures of environmental impact as they are components of CF and EF (energy and electricity consumption) or resources of acknowledged, although more specific, environmental significance (water).

Studies excluded

A number of studies were found during the review process that were excluded because they used metrics other than EF or CF and were, therefore, outside of the scope of this systematic review (Brown 2004, Meltzer 2005, Williams 2005, Bissolotti *et al.* 2006). Some studies, identified in reference searches, that were only published in a language other than English were excluded as a translated title or executive summary review indicated they were unlikely to contain new footprint studies, including works by Bech-Danielsen *et al.* (1997), Foldager and Dyck-Madsen (2002), and Kristensen *et al.* (2010). Finally, footprint studies of developer-led eco-developments, such as BedZed (e.g. Tinsley and George 2006, Hodge and Haltrecht 2009), were also excluded, although they are often referred to as ecovillages, as they are typologically different from the grass-roots, member-led communities on which this review focused.

Explanation of results

The data compiled from the review are summarised in Tables 4 and 5. Table 4 contains all the studies that used EF, and Table 5 all the studies that used CF. The information is arranged in the order of the year the study was published, from the earliest to the most recent. Each table provides some basic details of the community and the study, and highlights the footprint values from the community with the comparison figure from the study. Various comparison figures were used in the different studies, and varied from a proposed alternative development, to another local community, or a regional or national footprint figure.

The majority of the communities considered were classified as ecovillages, with fewer considering themselves to be purely co-housing communities. There were a number of ecovillages that also used co-housing principles in their community.

Many of the studies, particularly the less commonly cited works, were found in the grey literature, which may explain why they were not included in previous reviews.

Analysis of studies

The analysis below refers to the studies listed in Tables 4 and 5. The citations are provided in the tables and, therefore, are not reproduced in the text, to make it easier to read. Before analysing the findings of the review, it is important to note the limitations of comparing studies of EF and CF, as assumptions inherent in the component footprint calculation process can influence the calculated footprint.

Some studies clearly stated the limitations of their calculations. For example Moos *et al.* (2006) identified their calculation as a partial footprint, noting that limitations in data gathered “precluded the inclusion of some behavioural categories such as food consumed in restaurants and air travel, but the categories that are included account for 59% of the average American footprint” (p. 206). Such clear statements of limitations were not common across all studies, especially in those from the grey literature. The footprint figures provided in the studies in this review have not been subject

Table 4. Summary of EF studies from this review.

Community (Country)	Year of study	Type of community	Journal/article source	Footprint	Metric	Comparison figure	% of comparison	Details of comparison used in study	Reference
Toarp (Sweden)	2001	Ecovillage	Journal of Environmental Planning and Management	2.8	EF (gha/pp)	3.7	76	Oxie (local village)	Haraldsson <i>et al.</i> (2001)
Findhorn (UK)	2006	Ecovillage	Report (Sustainable Development Research Institute, Scotland)	2.7	EF (gha/pp)	5.4	50	Scotland	Tinsley and George (2006)
Ecovillage at Ithaca (USA)	2006	Ecovillage/ co-housing	Journal of Urban Design	4.3	Partial EF (gha/pp)	7.5	56	Rose Hill potential development	Moos <i>et al.</i> (2006)
Konohana Family (Japan) ^a	2007	Ecovillage	Report referenced in Electronic Journal of Contemporary Japanese Studies	0.8 (1.7)	Earths (EF gha/pp)	2.35 (4.9)	34	Japan	Brecher (2013)
Steward Woodland (England)	2008	Ecovillage	Ecological Footprint report (4th World Ecological Design)	2.1	EF (gha/pp)	5.3	39	Teignbridge (Local District)	Knight (2008)
Krishna Valley (Hungary)	2009	Ecovillage	Report (Eötvös Lóránd University, Hungary)	1.5	EF (gha/pp)	3.6	42	Hungary	Lánczi (2009)
OUR Ecovillage (Canada)	2010	Ecovillage	Master's Thesis (University of Alberta, Canada)	5.0	EF (gha/pp)	7.1	70	Canada	Giratalla (2010)
Quayside Village (Canada)	2010	Co-housing		5.2	EF (gha/pp)	7.1	73	Canada	
Tir y Gafel (Wales)	2010	Ecovillage	Annual report (Tir y Gafel, Wales)	2.6	EF (gha/pp)	4.4	58	Wales	Lammas Ecovillage (2011a, 2011b, 2013, 2014)
Tir y Gafel (Wales)	2011	Ecovillage		2.4	EF (gha/pp)	4.4	54	Wales	
Tir y Gafel (Wales)	2012	Ecovillage		1.7	EF (gha/pp)	4.4	39	Wales	
Tir y Gafel (Wales)	2013	Ecovillage		1.5	EF (gha/pp)	4.4	34	Wales	
Tir y Gafel (Wales)	2014	Ecovillage		1.6	EF (gha/pp)	4.4	35	Wales	
Earthhaven (USA)	2014	Ecovillage	PhD thesis (Rutgers University, USA)	1.3	EF (gha/pp)	4.2	33	Buncombe (Local County)	Sherry (2014)
Sirius (USA)	2014	Ecovillage		1.5	EF (gha/pp)	3.9	39	Franklin (Local County)	
Ecovillage at Ithaca (USA)	2014	Ecovillage/ cohousing		1.4	EF (gha/pp)	3.0	48	Tompkins (Local County)	
Cloughjordan (Ireland) ^b	2014	Ecovillage	Report (Tipperary Energy Agency, Ireland)	2	EF (gha/pp)	4.3	47	Average of 79 other Irish settlements surveyed	Cloughjordan Ecovillage (2014)

^aNote that a copy of the original study could not be obtained; however, results were included as they were summarised in an academic journal paper.

^bNote that a copy of the original study could not be obtained; however, study included as a detailed summary was available on the Cloughjordan website.

Table 5. Summary of CF studies from this review.

Community (Country)	Year	Type of community	Journal/article Source	Footprint	Metric	Comparison figure	% of comparison	Details of comparison used in study	Reference
Ekolehtila (Finland)	2000	Ecovillage	Environmental Impact Assessment Review	3.7	tCO ₂ /yr/pp	3.6	102	Urban small house in Finland	Harmaajarvi (2000)
Pellesmaki (Finland)	2000	Ecovillage		3.2	tCO ₂ /yr/pp	3.6	87		
Puutosmaki (Finland)	2000	Ecovillage		4.4	tCO ₂ /yr/pp	3.6	121		
Vuonisahti (Finland)	2000	Ecovillage		4.8	tCO ₂ /yr/pp	3.6	133		
Munksøgaard (Denmark)	2001	Co-housing	Report (Munksøgaard, Denmark)	2.5	tCO ₂ /yr/pp	4.8	52	Danish average	Samuelsson (2001)
Sieben Linden (Germany)	2004	Ecovillage	Report (Center for Environmental Systems Research, University of Kassel, Germany)	2.2	tCO _{2e} /yr/pp	8.1	27	Germany	Simon <i>et al.</i> (2004)
Kommune Niederkaufungen (Germany)	2004	Ecovillage		3.0	tCO _{2e} /yr/pp	8.1	37	Germany	
Konohana Family (Japan) ^a	2007	Ecovillage	Internal report referenced in journal article	1.1	tCO ₂ /yr/pp	2.2	48	Japan	Brecher (2013)
Svanholm Collective (Denmark)	2009	Intentional community	Report (Pöyry Energy Consulting, Denmark)	1.8	tCO ₂ /yr/pp	6.2	30	Denmark	Pöyry Energy Consulting (2009)
Hjortshøj Co-operative (Denmark)	2009	Ecovillage		2.4	tCO ₂ /yr/pp	6.2	39	Denmark	
Munksøgaard (Denmark)	2009	Co-housing		2.6	tCO ₂ /yr/pp	6.2	42	Denmark	
Dancing Rabbit (USA)	2013	Ecovillage	Summary of Thesis (University of North Texas, USA) on DR website ^b	8.3-9.4	tCO _{2e} /yr/pp	20.0	47	USA	Sirna (2013)
Färdknäppen (Sweden)	2014	Co-housing	Master's Thesis (KTH Royal Institute of Technology, Sweden)	3.6	tCO ₂ /yr/pp	4.6	78	Swedish average	Sundberg (2014)

^aNote that a copy of the original study could not be obtained; however, as the results were summarised in an academic journal paper, the results were included.

^bNote that a copy of the original study could not be obtained; however, study included as a detailed summary was available on the Dancing Rabbit website.

to assessment of rigour or validity, other than the criteria for acceptance into the review. Some general comparisons between studies have been made, to highlight key points about the range and diversity of results.

Findings of EF studies

All the EF studies (summarised in Table 4) found the focus communities were achieving lower footprints than the “normal” comparisons, although one study concluded that due to the small sample size, the difference could not be considered significant (Haraldsson *et al.* 2001). The average EF in the intentional communities across all the studies was measured at only ~50% of the comparison figures.

As can be seen from Figure 3, the measured EFs varied greatly between the different communities. Quayside Village Cohousing, Canada, had the highest measured EF of 5.2 gha/pp, which is ~400% greater than the lowest footprint, 1.3 gha/pp at Earthaven Ecovillage, USA. There was also a large variation when considering a relevant comparison figure. The EF of Earthaven was only 34% of the calculated EF for Buncombe County, in which it is located. By comparison, the EF of Toarp ecovillage in Sweden was 76% of the calculated EF for Oxie, a “normal” Swedish town located close to Toarp. Ecovillage at Ithaca was unique in that two separate EF studies have been undertaken, in 2006 and 2014. The EF reduced from a partial footprint of 4.3 to 1.4 gha over that period. Aside from methodological differences in the calculations, a major cause of the reduction in footprint was a large-scale (50 kW) solar PV that had been installed at Ecovillage at Ithaca since 2006 (Sherry 2014).

Findings of CF studies

The majority of the CF studies (summarised in Table 5) found the studied communities were achieving lower footprints than the “normal” comparisons. The study by Harmaajarvi (2000) was unique in its finding that CO₂ emissions from three of the studied ecovillages were higher than that from the comparison location, when transportation, construction, and use were all covered in the analysis. The impact of fuel burning for personal transportation is much more significant in the CF than EF calculations, and the rural locations of the Finnish ecovillages were a major contributor to the high footprints. The average CF in the intentional communities across all the studies was ~35% less than the comparison figures.

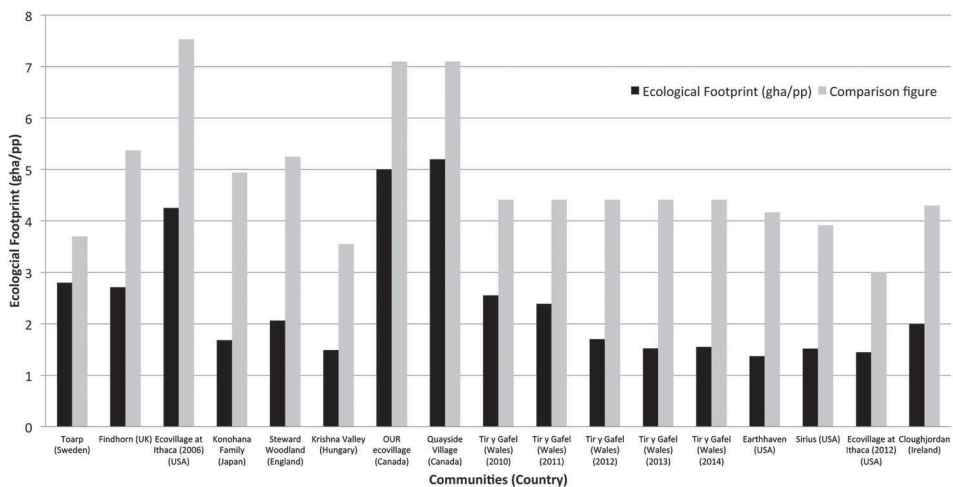


Figure 3. Graph of the EF results from studies that used EF as a metric, compared with the most relevant comparison figure.

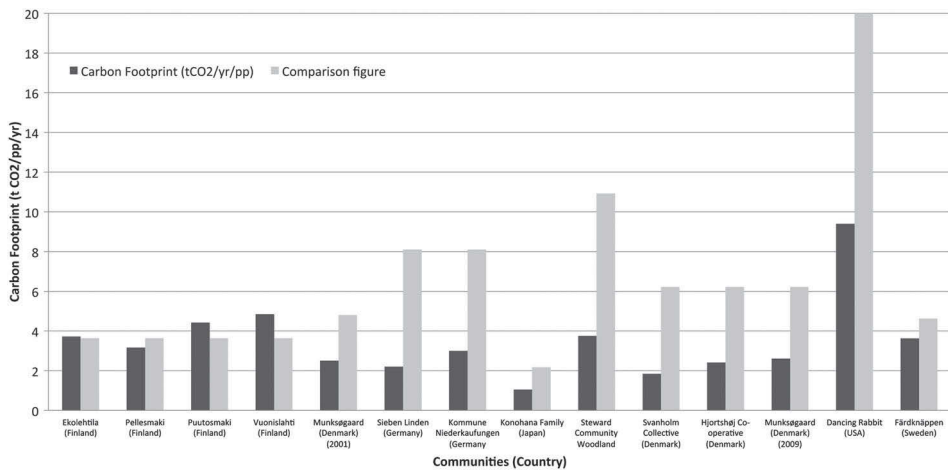


Figure 4. Graph of the results from studies that used CF as a metric, compared with the most relevant comparison figure.

There was also a large difference in the CFs between the different communities that used this metric, as shown in [Figure 4](#). Dancing Rabbit, an ecovillage in rural USA, had a CF of 9.4 tCO₂/yr/pp, which is ~1000% greater than 1.0 tCO₂/yr/pp at Konohana Family community in Japan. The variation when considering a relevant comparison figure was larger than that found with the EF. The CF of Vuonilahti, a Finnish ecovillage, was 133% of the calculated CF for a small urban house in Finland. By comparison, the CF of Sieben Linden ecovillage in Germany was only 27% of the German footprint.

Discussion

This systematic literature review has provided new insights into the breadth and depth of the impact of sustainability initiatives in intentional communities over the past 15 years. Importantly, it presents many more studies that have tried to quantify the environmental impacts of intentional communities than have been highlighted in previous reviews of the literature. Furthermore, the evidence from the vast majority of studies strongly indicates that these intentional communities do achieve lower environmental impacts than comparable mainstream communities. [Figure 5](#) shows the footprints (EF and CF) as a percentage of the comparison figure from all the studies found in this review. With the exception of three ecovillages from the CF study by Harmaajarvi (2000), all studies found that environmental impact reduction is occurring. This shows that, at least in the cases explored, intentions to achieve greater ecological sustainability are flowing through into practice. It also suggests that further study of these communities could provide important evidence on how lower environmental impacts can be achieved.

Validity of footprint comparisons

As is noted in the footprint literature, there are difficulties with comparing EF figures derived from compound calculations (such as from the Living Planet Report) with those from component calculations – the method used by the majority of EF studies in this review (Simmons *et al.* 2000). To highlight these difficulties, Giratalla (2010) had members of two communities complete an online survey EF assessment using the Global Footprint Network calculator (a modified compound method for calculating EF) to determine an average figure for the community, and then completed his own simplified component-based EF for both communities (Giratalla 2010). The results are shown in [Table 6](#). Commenting on the differences that could be expected to occur from the different calculation methods, Giratalla notes that the online calculators include a

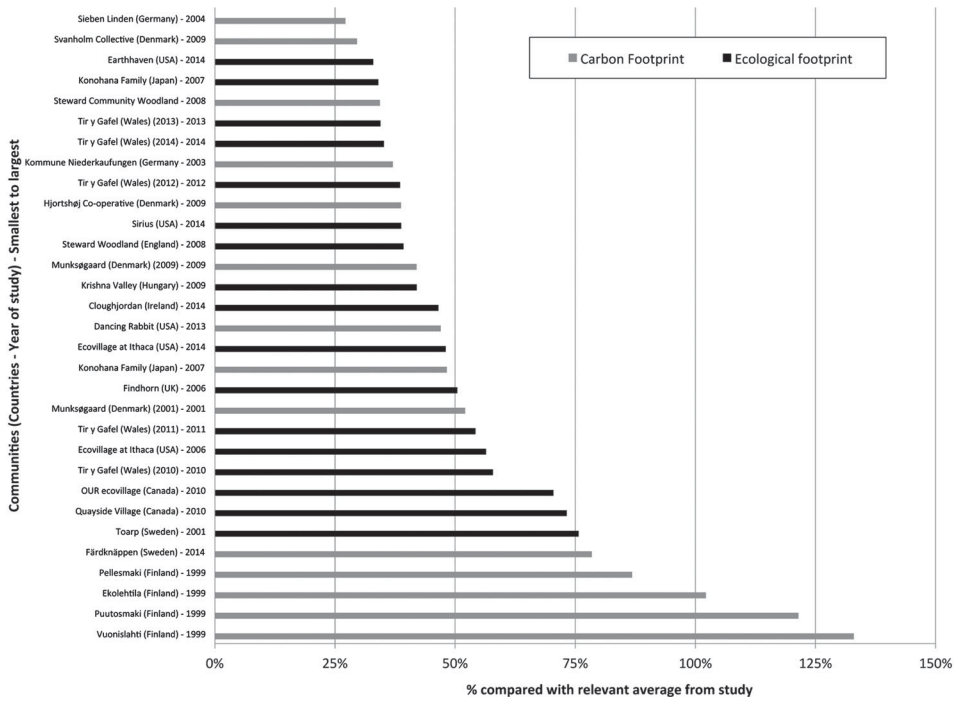


Figure 5. Comparison of the results as a percentage of the relevant comparison figure, both EF and CF, arranged from the smallest to the largest.

factor attached to every calculation of 2.6 gha/pp, to account for services including healthcare, legal, government, and military services. It is also noted that the minimum possible to achieve with this calculator is 4.3 gha/pp.⁷ The figures from compound method calculations were, therefore, much higher. Giratalla adjusted the simplified component EF by adding 2.6 gha/pp to account for services.

Some studies (e.g. Tinsley and George 2006) specifically calculated components for services, government, and capital investment, whilst other studies did not clearly outline how factors such as services and government were accounted for in the footprint study. The majority of the EF studies used the same methodology to calculate the intentional community footprint, and a “mainstream” comparison footprint. Exceptions were the calculations by Giratalla (2010), and multiple calculations by Lammas (Tir y Gafel) Ecovillage (2014) and for Konohana Family community, referenced in Brecher (2013). CF calculations more commonly referred to a national average figure.

The influence that choice of scope and assumptions can have within individual footprint studies, whether ecological or carbon, meant that absolute cross-study comparisons in this paper were of limited usefulness. For this reason, the relation between the intentional community and the comparison community has been the main point of focus within this review paper. The methods, assumptions, and scopes used internally within each study can be assumed to be consistent. By taking this approach, useful cross-study comparisons can be made.

Table 6. Summary of results from the study by Giratalla (2010).

	GFN online calculator EF (gha/pp)	EF from simplified component method (gha/pp)	Adjusted component EF (added 2.6 gha for services) (gha/pp)
Quayside Village	6.4	2.6	5.2
OUR Ecovillage	6.5	2.4	5.0
Canada	7.1	–	–

Despite the recognised limitations of the EF, its usefulness as an indicator was noted. A strong awareness and recognition of the indicator as a metric for measuring environmental impact amongst residents of the case-study communities were highlighted, making it an important metric for effectively communicating the results of studies back to communities (Sherry 2014). A wider study of the uses and perceptions of the EF found that it had a strong resonance with local residents, environment groups, and key individuals, and the interest generated was one of the most important perceived outcomes of EF studies (Wiedmann and Barrett 2010).

Progress towards sustainability

The difficulties in comparing the EF calculated with different methods means that this review has generally refrained from comparing community footprint values with the national values determined by global footprint assessments, such as the Living Planet Report (WWF 2014). However, it is worth noting that whilst many of these communities are making progress towards ecological sustainability, few could claim to have reached a level of environmental impact that could be described as sustainable. Recognising the limitations of doing so, the community footprints were compared with the results from the latest Living Planet Report (WWF 2014), which found the available global biocapacity to be only 1.7 gha/pp. Only five of the communities that measured EF from this review had footprints lower than this, and so could claim to be living within ecologically sustainable limits: Krishna Valley (1.5 gha/pp), Earthaven (1.4 gha/pp), Sirius (1.5 gha/pp), Ecovillage at Ithaca (1.4 gha/pp), and Tir y Gafel in 2012, 2013, and 2014 (1.7–1.5 gha/pp). Assuming that a footprint calculation using a compound method (such as the Living Planet Report) would result in a higher footprint value (as was the case in the study by Giratalla (2010) shown in Table 6), even these communities are unlikely to be living within the ecological boundaries of one planet.

Factors influencing the footprints

The consensus amongst the studies was that the most significant contributing factors to the EFs and CFs of the communities were housing, food, and transport, with food being much more significant in EF calculations than in CF calculations. Haraldsson *et al.* (2001) found that housing and food accounted for approximately 75% of the total EF for both the ecovillage and the reference community, with transport accounting for a further 14%. Broader studies have also identified these same three categories (of housing, eating, and mobility) as the priority areas for action across all types of households and lifestyle groups (Spangenberg and Lorek 2002, Hertwich and Peters 2009, Minx *et al.* 2009, Druckman and Jackson 2010).

A number of the papers attempt to discern what influence the design and physical infrastructure of the communities had on the footprint, compared with personal consumption practices. As their analysis compared three subdivision designs for the same site, Moos *et al.* (2006) found that on built form alone, high-density living had a lower EF. The potential compatibility of co-housing with higher density living, due to the sharing of more communal spaces, was identified by Marckmann *et al.* (2012) as one of the four main arguments advanced for the environmental sustainability benefits of co-housing (and ecovillages). This was highlighted by Williams (2005), who found that US co-housing communities achieve average space savings of 31%, compared to mainstream households. However, Moos *et al.* (2006) concluded that personal consumption choices make a greater contribution to EF than physical infrastructure, and when personal consumption was included in their study, the ecovillage had a lower EF. This led the authors to suggest that from an ecological perspective, behavioural patterns are more important than physical infrastructure. Haraldsson *et al.* (2001) noted that 95% of the contribution to EF of the house construction came during the operation of the house (over a 50-year period), rather than being embedded in the construction materials. Therefore, design decisions that reduced energy usage from lighting, and heating and cooling, played an important role in determining the EF of a community. The role that the physical and

social structure of co-housing communities played in enabling pro-environmental behaviours in residents is another argued benefit of communal living (Marckmann *et al.* 2012).

Common practices across communities

The communities considered in this review cover diverse climatic zones, available land areas, levels of remoteness, and cultural understandings. Although this review was not designed to look in detail at the individual communities included, it was clear that a number of practices were more prevalent amongst the ecovillage and co-housing communities, and contributed to the low footprint results.

Most communities had used sustainable design and construction principles and techniques, such as the use of local construction materials, and passive solar designs with high levels of insulation. Some proportion of energy requirements being supplied by renewable energy was also common, with a number of communities being energy self-sufficient. As Sherry (2014) notes, these practices are relatively easily translatable to other communities and developments. However, they may be easier to implement in an intentional community. Marckmann *et al.* (2012) note that the scale of social organisation, and high levels of social capital enable residents to play an active role in adopting sustainable technologies for their homes. Other practices such as resource reuse and sharing also seem to rely upon, or be made more effective by, the strength of the social capital in the communities. Meltzer (2005) found that resident ownership of washing machines, tumble dryers, freezers, and DIY and gardening tools was all reduced by living in co-housing communities, because people tended to share or use communal facilities. The relative environmental benefits from the sharing of goods and resources are greatest for small households, and these environmental advantages were the fourth argued benefit of co-housing and ecovillage living that Marckmann *et al.* (2012) identified in the literature.

Reduced transport footprints were common to many communities, particularly co-housing, as the communal focus encourages car-sharing schemes and allows community co-working spaces that reduce travel requirements (Moos *et al.* 2006). Some communities did not achieve the same reduction in transport footprints, due to either a reliance on private cars for travel for work and provisions in rural ecovillages (e.g. Harmaajarvi 2000, Giratalla 2010), or a high frequency of air travel amongst residents (Tinsley and George 2006, Giratalla 2010).

Household food provisioning and procurement, as well as cooking practices, were other common contributors to the low footprints of the intentional communities in the studies. Many communities, particularly the ecovillages with greater land area, produced a significant proportion of their food requirements from their own organic farms and gardens. This reduced the impact of packaging, distribution, and industrial farming practices on their EFs. Whilst not all communities were strictly vegetarian, reduced levels of meat consumption were also common, and most shared community meals were vegetarian only. Food-related practices, such as gardening, sharing farm produce, and sharing common meals, were seen as important builders of community (Sherry 2014), strengthening the social capital within the communities and also with the surrounding region.

Finally, most studies recorded levels of recycling and composting of waste materials that were significantly greater than surrounding regions. For example, Ecovillage at Ithaca disposed of 75% less waste than the US average (Sherry 2014).

Recommendations for further research

This systematic review highlighted a number of areas in this field that would benefit from further research. The Global Ecovillage Network contains approximately 1000 communities that are registered as ecovillages in its online database (GEN 2013). A large number of communities are trying to create environmentally sustainable lifestyles; yet footprint studies have only been undertaken for 23 communities. Studies have, for the most part, focused on communities in Europe and North America. This is perhaps not surprising, as the most active intentional communities internationally

are located in these regions. However, there is also a large and active network of communities in South Asia and Oceania, and increasingly South America and Africa, which so far have not been represented in footprint studies. Finally, of the studies covered in the review, only six directly compared the intentional community footprint with a comparable mainstream community using the same footprint methodology (including Moos *et al.* (2006) who compared with an alternative development proposal for the same site). Further research carried out in this way would contribute greatly to understanding the environmental impact of intentional communities.

Intentional communities provide rich and complex examples of innovations in everyday consumption practices at the grass-roots level. A number of studies evaluate in greater depth how intentional communities achieve, or attempt to achieve, their ecological sustainability goals (see, e.g. Irrgang 2005, Meltzer 2005, Ergas 2010, Lockyer 2010, Kunze 2012, Boyer 2013, Sherry 2014). A complete account of the literature examining intentional communities as ecological and social experiments is beyond the scope of this research. One area that has not been adequately researched, however, is the application of social practice theory to intentional communities. Compared to traditional theories of creating pro-behaviour change (see Jackson 2005), social practice theory “raises a series of radically different questions about how to create more sustainable patterns of consumption” (Hargreaves 2011, p. 84). It has also been identified as providing a useful lens to inform our understanding of the grassroots, where innovations in sustainable practice are occurring (Seyfang and Haxeltine 2012). It conceptualises everyday practices as the integration of three elements of meanings, competences/know-how, and materials (Shove *et al.* 2012). This provides a theoretical framework for understanding the way meanings (e.g. intention to live more sustainably) combine with the other elements of know-how (e.g. knowing how to turn intentions into reality) and material (e.g. the nature of the built form the community inhabits) to deliver particular EF and CF outcomes. Social practice theory holds the promise of delivering unique insights regarding the everyday household consumption practices that make such a significant contribution to reducing the EFs and CFs of intentional communities with ecological principles.

Conclusion

The question of how to achieve sustainability at a community scale is a matter of ongoing discussion in the literature (Blay-Palmer 2011). This paper provided two important contributions to this discussion. Firstly, it provided the first systematic and comprehensive summary of EF and CF studies of intentional communities, which covered significantly more studies than any previous review. Intentional communities are an innovative grass-roots niche where a number of experiments in creating sustainable lifestyles at a community scale are taking place. Secondly, the studies covered in this review clearly indicated that progress towards sustainability at a community scale, at least in terms of environmental impact, has been made in some intentional communities. The trend of reducing environmental impacts was identified across a number of studies, which can provide evidence to support claims of greater ecological sustainability amongst community practitioners. These studies highlighted the importance of everyday consumption practices, particularly relating to food, inhabiting the household, and transportation, to the reduction of footprints. The combination of physical design, strong social capital, and shared principles and goals of reduced environmental impact was found to remove barriers and provide opportunities for sustainable practices to be established, grow, and evolve within the communities.

Some areas where knowledge could be strengthened were identified, and key questions for future research were raised. How can we understand the role of intentional communities in nurturing different consumption practices? Can the lessons from these projects be scaled up, replicated, or translated to other communities on a wider scale? If so, how? The results of this review emphasise the need for continued research that builds on existing explorations of the roles that ecovillages and co-housing communities can play in transitioning to sustainable sociotechnical systems (e.g. Irrgang 2005, Meltzer 2005, Ergas 2010, Lockyer 2010, Kunze 2012, Boyer 2013, Sherry 2014), whether they be

concerned with their roles as grass-roots innovative niches, continued investigations of their environmental sustainability, or the use of social practice theory to explore innovations in sustainable practice and policy.

Notes

1. The Global Footprint Network divides the Ecological Footprint into six components: carbon, fishing grounds, cropland, built-up land, forest products, and grazing products.
2. CO₂ equivalent figure comprises the six main gases with a direct greenhouse effect: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆).
3. (“Intentional community” OR “intentional communities”) AND (“ecological footprint” OR “eco-footprint”) (“Ecovillage” OR “Eco-village”) AND (“ecological footprint” OR “eco-footprint”) (“Cohousing” OR “Co-housing”) AND (“ecological footprint” OR “eco-footprint”)
4. Dates of studies found in the review are influenced by the fact that the use of the term “ecovillage” became commonly adopted in the 1990’s, as did the use of EF and CF as measures of environmental impact.
5. One study (Meltzer 2005) was found that measured the electricity consumption of Earthsong Cohousing in New Zealand; however, this was outside the scope of this systematic review.
6. The difference with numbers quoted above are due to the five annual monitoring reports for Tir y Gafel Ecovillage (also referred to as Lammas Ecovillage in the literature) (Lammas Ecovillage 2011a, 2011b, 2012, 2013, 2014) being counted as one continuous study, and both EF and EF were calculated for Konohana Family community.
7. The figures quoted from Giratalla are specific to calculations done for Canadian locations. The figures would be different in different countries/regions, but the principles would remain.

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5.3 Supplement – Bundagen ecological footprint

As discussed in Chapter 4, a survey was distributed to Bundagen residents to collect data for an ecological footprint analysis of the community. The data collection methods for the EF analysis of the Bundagen community are outlined in Section 4.4.1. To briefly recap, the required data was gathered by a survey voluntarily completed by Bundagen households. A copy of the survey is attached as Appendix E. The survey collected data in seven categories i) home energy use, ii) transportation / travel, iii) food consumption, iv) goods and consumables, v) waste disposal, vi) house building materials, and vii) water usage.

5.3.1 Analysis

To determine the ecological footprint of Bundagen Community, the survey data was entered into the Global Footprint Network's (GFN) online ecological footprint calculator (Global Footprint Network 2015). It uses the data to modify details of Australia's national average footprint to reflect the survey answers. This reflects a hybrid calculation model, where component data (locally specific data from the surveys) are used to modify the national footprint which has been calculated with a compound methodology. A similar approach of using the GFN calculator has previously been applied to intentional community research (Giratalla 2010).

Ecological footprint survey responses were received from 14 households, representing 28 people in total. This equates to 15% of households, or 19% of residents of Bundagen being captured in the survey (based on 2012 Bundagen census). The details provided by each household were compiled (see Appendix F) and entered into the GFN calculator, which provided the following data per person, per household:

- The number of Planet Earths required to provide enough resources if everyone lived like the participating households
- The number of global hectares of the Earth's productive area required to support the household lifestyle
- Breakdown of EF into global hectares (gha) for each component of Food, Shelter, Mobility, Goods and Services

This hybrid approach to analysis was adopted as a compromise between validity, rigour, and time available, as the EF analysis was not the primary focus of this research project. The use of the GFN online calculator ensured the method of calculation followed a process that is widely used and consistent with the international Ecological Footprint Standards (e.g. (Global Footprint Network 2017b; WWF 2014)). However, by using a proprietary online calculator, the ability to interrogate the data and understand the sensitivities of the results was reduced, compared with other studies that have used Life Cycle Analysis (LCA) software (as was adopted by Sherry (2014)).

5.3.2 Results

In order to determine an average footprint per person within the community, the footprint for an individual in each household was multiplied by the number of members of the household to determine a household footprint. These were summed to determine the total footprint of all 28 members of the households that completed the survey (113.7 gha). The average footprint of these households was taken as the average for the community. The proportion of community residents who completed the surveys (19%) was reasonable in comparison to similar EF analyses²⁰, yet still only represents a minority of residents. The survey reach is also likely to be biased due to the self-selection of respondents, although the responses received did appear to represent a large diversity of lifestyles. Another limitation of the survey methodology is the reliance on resident reported answers, which may introduce reporting and memory biases or errors.

The results of the analysis determined that the average resident of Bundagen has a footprint of 4.1 gha, which is equivalent to 60% of the average Australian footprint, or 70% of the average inhabitant of the Coffs Harbour region (see Figure 5-1).

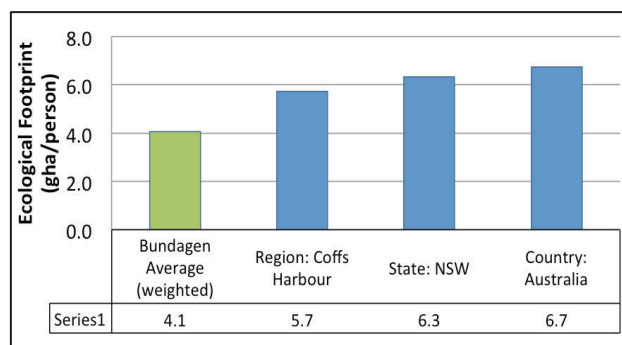


Figure 5-1: Bundagen footprint compared with regional, state and national averages (sourced from Australian Conservation Foundation consumption atlas (ACF 2007)).

Figure 5-2 shows the contribution to the average footprint of the five components (Food, Shelter, Mobility, Goods, and Services) as well as the size of variations in footprint contributions that came from the survey respondents. This shows that the individual footprints of Bundagen residents ranged from 2.6 gha to 6 gha. The largest contribution to the EF comes from food, followed by services. By far the largest proportion of the variation in the EFs of Bundagen residents can be attributed to the effects of different diets and food sourcing practices within the community.

²⁰ The total household response rate for the Findhorn study was 27% (Stephen Tinsley & George 2006)

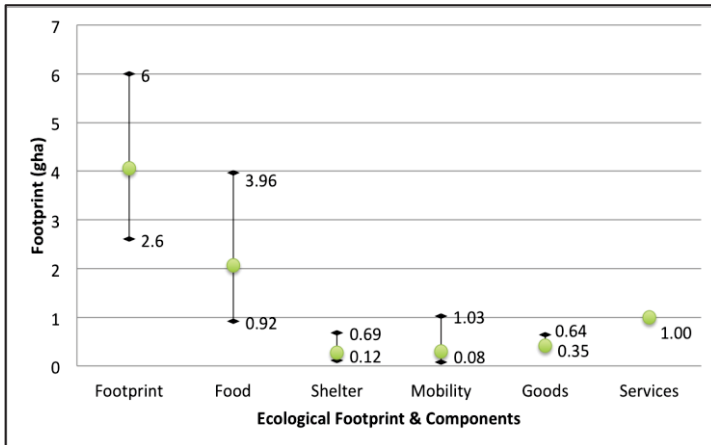


Figure 5-2: Variance in the footprint and footprint components of all respondents within Bundagen

Figure 5-3 shows an updated version of Figure 3 from the publication (Daly 2017) with the Bundagen footprint included. As Daly (2017) notes, residents of intentional communities are lowering footprints by between 25 - 60%. The Bundagen footprint is 30% - 40% lower, depending on the region of comparison.

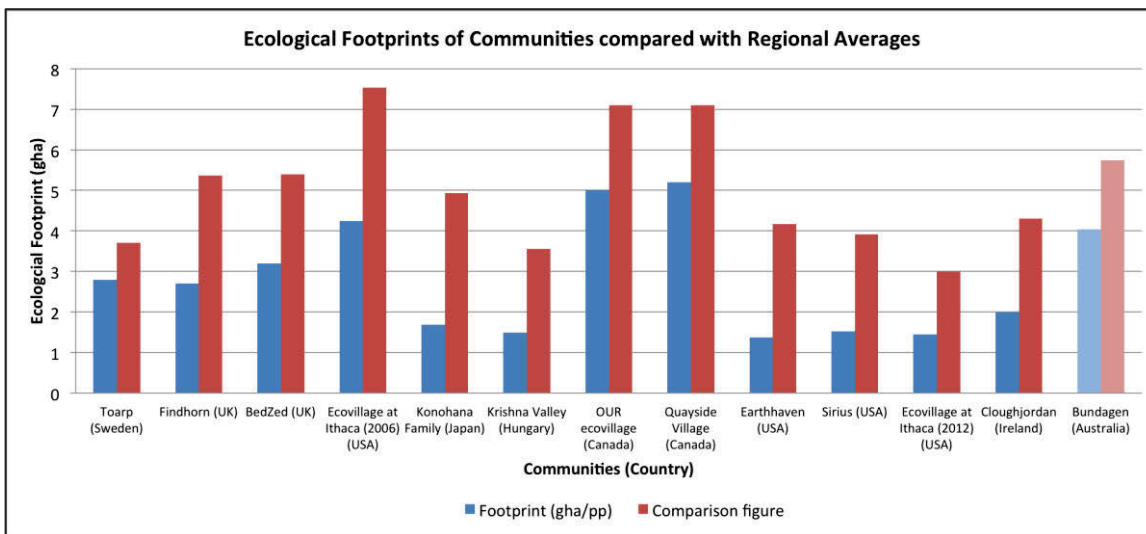


Figure 5-3: The ecological footprints of intentional communities worldwide compared with relevant regional averages, including Bundagen

It is important to note that the footprinting methodologies used were not consistent across all the studies from the systematic review, so it is difficult to directly compare between communities. The method of calculating Bundagen’s footprint, the hybrid use of the survey and GFN online calculator, is a conservative one. A key impact of using the GFN calculator is that this allocates a ‘services’ category to every footprint, for activities that aren’t considered personal, but societal. This is not always captured consistently in footprinting analysis²¹. These areas include (but are not limited to)

²¹ See the discussion of a previous comparison by Girratalla on p. 13 of Daly (2017)

healthcare, entertainment, restaurants, real estate, legal services, government and the military (Global Footprint Network 2017a). For an Australian they account for an extra 1 gha (25%) on the footprint of every Bundagen resident. This calculation method improves the accuracy of comparisons between Bundagen residents and other Australian communities, but could distort comparisons with other communities from the systematic review that used a different methodology.

5.4 Ecological footprinting and social practices

In the context of this thesis, it is important to note that a practice theory approach to ecological footprinting would suggest that the practice is the appropriate unit of analysis when performing an EF study, rather than the individual or community. There are some examples of studies comparing environmental impacts of different forms of practice, e.g. car sharing vs car ownership (Martin & Shaheen 2011) or water, energy and detergent consumption of various laundering practices (Retamal & Schandl 2017). In an intentional community context, such research was extremely limited. An exploration of practice footprinting, although potentially a rich research pathway, would not therefore have been an appropriate path to take in this thesis. The primary purpose of the systematic review was to use existing research to understand the environmental sustainability of intentionally sustainable communities, and the Bundagen footprint was developed in the context of this previous footprinting research.

Comparing the EFs of different, but related, practices would pose numerous challenges around defining scope and boundaries of practices in a measurable way. Nevertheless, it could provide a powerful tool for comparing different types of practice interventions, and warrants further consideration in future research.

5.5 Summary

Daly (2017) demonstrates that the number of communities that have investigated and published data on their footprints was larger than expected from previous reviews. Although that number remains small, many were achieving significant reductions in measured environmental impact. Figure 5-4 and Figure 5-5 provide a visual representation of the comparative difference in EF and CF footprints (respectively) of the communities covered in the review²².

²² This is a visual representation of the data presented in Table 4 and Table 5 in the included publication. The circles are scaled in proportion to the footprint value.

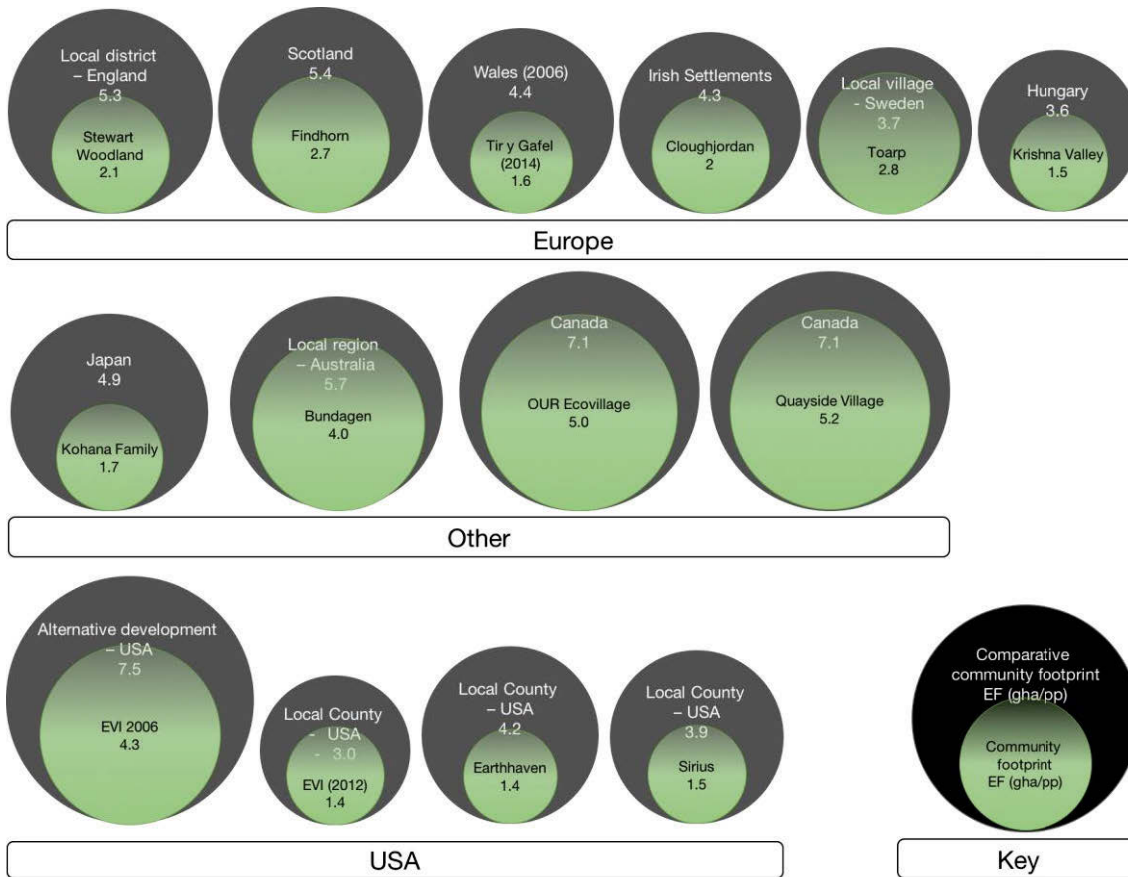


Figure 5-4: Visual representation of the ecological footprints of the intentional communities from the systematic review compared with relevant regional averages, including Bundagen

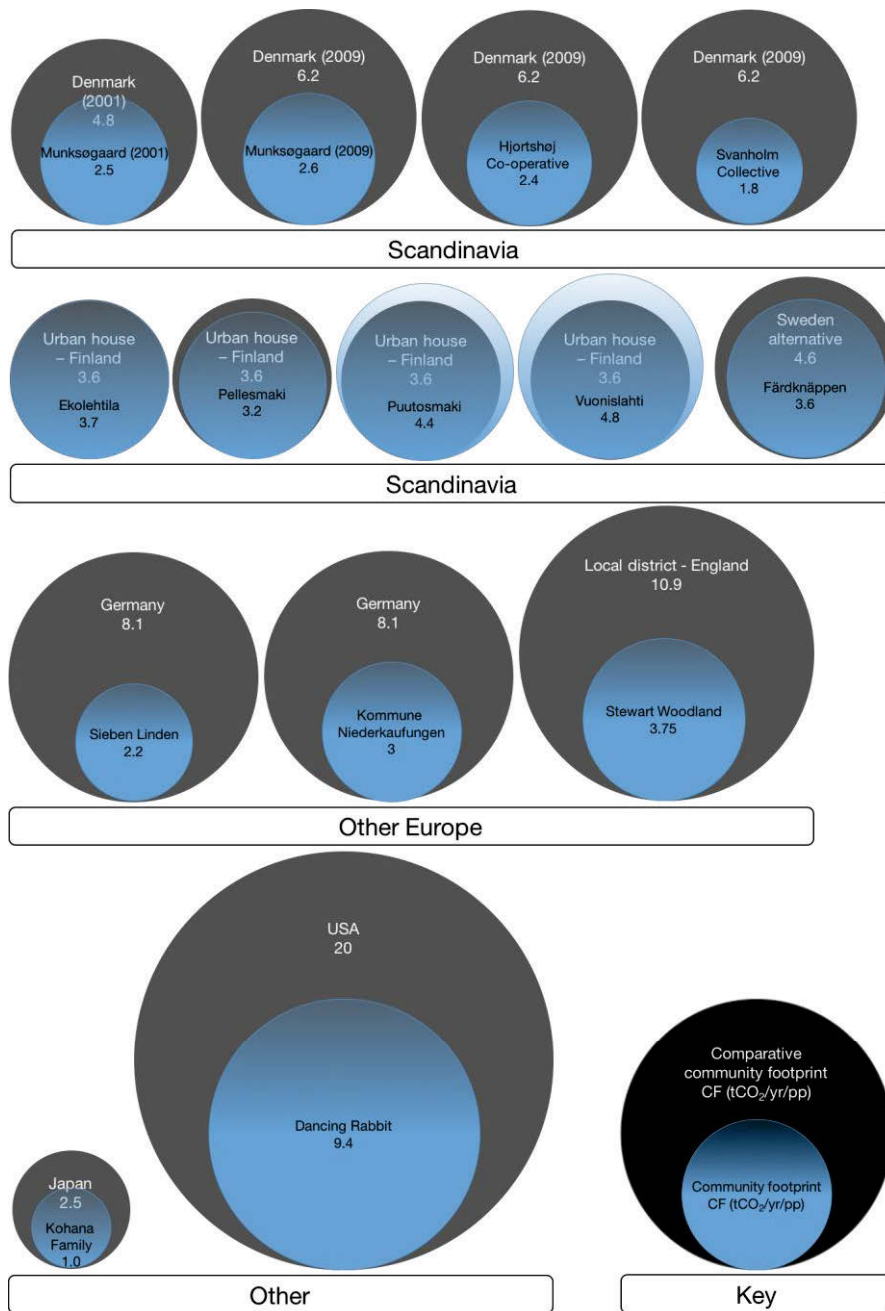


Figure 5-5: Visual representation of the carbon footprints of the intentional communities from the systematic review compared with relevant regional averages.

Linking the results of the systematic review to the overall context of the doctoral research, several conclusions emerge:

- Intentionally sustainable communities (or as referred to in the publication - intentional communities with ecological principles) are sites where consumption impacts are reduced and therefore constitute a suitable focus for exploring more sustainable consumption practices.
- The systematic review confirmed the importance of particular everyday practices – food, transport, waste disposal etc. – to household ecological footprints. This supported the

decision to focus on the variety of household practices within the case studies (to be discussed in Chapters 6 and 7).

- The systematic review confirmed that very few studies had been carried out that quantify the environmental impact of intentionally sustainable communities in Australia. This further justifies the decision to focus on Australian case studies to improve the understanding of this context.

Building on the findings of the systematic review, the results of the Bundagen ecological footprint survey indicate that comparable magnitude improvements in EF are being achieved in this community. This validates the methods used in compiling the database of Australian intentionally sustainable communities (Section 4.4.2), as it indicates that in this case, one of the communities selected as a site of sustainable consumption based on the New Economics indicators, is indeed reducing its ecological footprint compared to surrounding communities. As explained in Section 4.5.2, an EF study was not undertaken for Murundaka, as they had previously assessed their energy consumption (this is discussed further in Section 7.4) and there was a risk of 'research fatigue' developing in the community.

Quantitative data on footprints indicate that intentionally sustainable communities are reducing their environmental impact. A number of studies have explored in greater depth how intentional communities achieve, or attempt to achieve, their ecological sustainability goals (see, e.g. Irrgang 2005, Meltzer 2005, Ergas 2010, Lockyer 2010, Kunze 2012, Boyer 2013, Sherry 2014), however this type of research in an Australian context has been minimal. Furthermore, social practice theory has been little used for qualitative exploration of practices in intentionally sustainable communities, despite the suitable framework it provides. The following two chapters will seek to address these gaps in the research by examining how household consumption practices are made 'sustainable' in communities such as those explored in the systematic review.

Chapter 6. Sustainable consumption practices at Bundagen Cooperative Community

6.1 Introduction

The literature review (Chapter 2) discussed a number of reasons why intentional communities represent sites of grassroots innovations in everyday lifestyles and household consumption. They are sites where people are making radical changes to their lifestyles to live in a more sustainable manner. Not only are changes being made but, as the results from the systematic literature review discussed in the Chapter 5 show, many studied intentional communities have made significant progress in improving the environmental sustainability of their members.

Social practice theory (SPT), as introduced in Chapter 3, is well suited for investigating how everyday consumption practices are enacted and changed within intentional communities. This framework provides a means of understanding the way meanings (e.g. intention to live more sustainably), combine with the other elements of know-how (e.g. knowing how to turn intentions into reality), and material (e.g. the nature of the built form the community inhabits) to deliver particular sustainability outcomes.

The following two chapters – 6 and 7 – present the findings of the case study investigations into the everyday household consumption practices in two Australian intentional communities: Bundagen Cooperative Community (Bundagen) and Murundaka Cohousing Community (Murundaka). These case studies were undertaken to provide answers to RQ2 and RQ3 as described in Section 4.3.1.

This chapter focuses specifically on Bundagen. As outlined in Section 4.5.1, this chapter is structured around several domains of practice that link the practices of the community members to the sustainable consumption priority areas. These domains are: i) *Creating home and community (Section 6.2)*, ii) *Governing home and community (Section 6.3)*, iii) *Dwelling the house (Section 6.4)*, and, iv) *Food provisioning and consumption (Section 6.5)*. Figure 6-1 shows a selection of images taken from the case study visit to the community to provide some context for this chapter.



a) Bush timber house with solar panels



b) Bundagen beach and Bongil Bongil National Park



c) Sign at the entry carved into a large log



d) Mudbrick house with solar panels



e) House and bus combined



f) Shared tractor in use slashing common lawns



g) View of a village area, with three houses visible



h) Shared laundry of one expanded house group



i) Main common house and games room



j) Bush carpentry house under construction



k) Large garden shared by a couple of households

Figure 6-1: A selection of photos of Bundagen

6.2 Creating home and community

The residents of Bundagen describe themselves as part of an intentional community (Bundagen Community 2016b). The story of the creation of Bundagen can be described as an expression or performance of the practice of intentionally creating a community. It is different in form to what is often discussed in SPT. It is not an everyday, routine practice; it is something that happens infrequently, and to some extent deliberately. Reckwitz (2002) describes practices as ways of acting and understanding that appear in different places at different times that can be carried out by different 'body/minds' (p.250). Considering this description, the creation of an intentional community can be described as a practice entity, a group coming together with a vision of an alternative lifestyle that addressed certain social, cultural and/or environmental issues in society (meaning), using a variety of different skills and know how (competence) to create and then maintain that vision in a physical place, with certain physical characteristics (material).

In this way, the creation of Bundagen can be seen as the performance of this practice entity by a group of agents who were acting as carriers of this practice. As well being a distinct and uncommon practice, there are many elements specific to the vision of the Bundagen community, competences of the members, and material characteristics of the land in which it is situated that shaped how that performance of creation occurred. The intentional nature of the community creation sets up certain structures, such as policies, rules, legal structures and physical infrastructures, that then influence how everyday life, and communal living happens within the community throughout its lifetime.

The following section will look at the bundle of practices which are illustrated in Figure 6-2, related to the creation of a community: creating an intentional community, designing and building a community, and group growth and contraction.



Figure 6-2: The domain of intentional community creation and the practices discussed in this section

6.2.1 Formation of Bundagen

This section will briefly outline the formative events in the creation of Bundagen, largely based on the interview with Chris (36 years²³), one of the earliest members of the community²⁴. Additional details are provided in Appendix G. The group that became Bundagen initially formed to stop a sand-mining development at nearby Middle Head beach in 1980. The nearby Bundagen headland²⁵, an area of ecological significance and beauty, was also being threatened by development. A group, called Storyboard, formed to purchase the land, drawing together people from the protest camp as well as people with links to existing intentional communities on the north coast of NSW. The idea evolved of creating an alternative development that would offer a means of conserving the land in the long term, as well as addressing other perceived social, economic and environmental issues present in society at the time. Regular planning meetings culminated in a long-weekend 'seminar' in June 1981. During this seminar, the Storyboard group organised presentations from people with expertise in various areas related to forming a community, and arranged a team to interview people seeking to join the community. The criteria to join the new community was 'Honesty, Openness and Courage'. Within two months of the seminar weekend, the funds were raised and the land was purchased.

Within the practice of creating a community there are many different meanings and competences that are combining to shape how the 'community-creation' practice is performed. There are also

²³ Indicates the number of years this person has been part of the community

²⁴ Chris knew of the land that became the Bundagen community whilst it was still farmland, and was witness to or at least peripherally involved in most of the stages of community formation. However, it does not claim to be the definitive account of the history of Bundagen.

²⁵ At this stage, a development company had a plan to buy the Bundagen land and turn it into a golf course and tourist development

different stages of the community creation process, or parts of the performance. Most of the original group that purchased Bundagen shared values around environmental activism, conservation and working communally. There were also many people with professional competences relevant to planning a community (planners, architects, town planners). However, these meanings may not have been held as strongly by many of those who actually performed the later stage of the community creation performance by moving on to the land. When the group originally bought the land, Chris said there was *'a huge feeling that we should do everything according to a plan'*. However, once the land was available he was *'a bit disappointed that there was a big movement for people just grabbing spots [for their house] ... rather than doing stuff communally'* (Chris, 36 years). Chris noted that many of the *'people who came to live here were sort of unemployed and looking for cheap options'* (Chris, 36 years). It is interesting to consider the things that were inscribed by the original planning (as lasting legacies) even if the later residents did not share the meaning and motivation that originally inspired the planning. These infrastructures (both physical, legal and social) that were created during the early days of the community continue to play a major role in sustaining and shaping many practices within the community.

6.2.2 *Creation of Bundagen Community*

This section will discuss the key elements of meanings, material and competence in the creation of the community. Bundagen was founded upon three guiding principles originally suggested by the Storyboard group, and – as far as Chris can recall – unanimously confirmed by the founding shareholders at the first meeting after the land was purchased (Chris 2017, pers. comms. 3 July). These principles are still prominently displayed on the community's webpage today (Bundagen Community 2016b):

- social harmony;
- environmental responsibility; and
- economic independence.

The shared meanings represented by these guiding principles are extremely important elements of Bundagen. Metcalf (2012) has identified a shared common vision as the key factor in whether intentional communities persist and prosper. The principles, and the way current Bundagen residents relate to them, will be discussed more below, and throughout this chapter.

Environmental responsibility

Environmental responsibility was very much a foundational principle of the community. As Chris discussed, a significant proportion of the founding members coalesced through local environmental protest movements. Janelle thought that caretakership of the land was *'meant to be the most important principle to bring people onto the land at the time'* (Janelle, 36 years). The Bundagen land

was already recognised as being of high environmental importance before the community bought the land, and preserving the land was important to the community from foundation. According to Chris, in 1981 the land adjacent to Bundagen was a flora reserve, and it has subsequently become the Bongil Bongil National Park. This area of forest is a *'littoral rainforest that is reputed to be the second most important in New South Wales'* (Chris, 36 years). The principle of the Bundagen community as caretakers of the land had obviously remained strong throughout the years. During the 1990s the community campaigned to have the surrounding state forest protected from development as a national park, which was eventually successful. They also negotiated a formal conservation agreement for much of the native forest on Bundagen lands, with that agreement being signed in 2010. For Chris, concern about degrading the land had remained a core issue, and was one of the key motivations for trying to live sustainably.

Bundagen formed over 30 years ago, and the meanings that guide the community, or attract people to the community have evolved over time. Janelle remarked that sustainability wasn't a commonly used word when Bundagen formed, but it was now an important topic of discussion:

at the [2014] visioning I noticed that sustainability was a really big topic for people, there was quite a lot of work groups on that. And sustainability of course wasn't even a word we looked at [during the formation stages] ... it didn't really talk about sustainability (Janelle, 36 years).

Janelle felt that the idea of caretakership of the land was being lost to a certain extent amongst the newer members. Meanings of stewardship and preservation did not appear as strong amongst newer, younger members. However, environmental ideals were still strongly expressed in terms of self-sufficiency and treading lightly. When Sandy discussed his reasons for moving to Bundagen, he said that the:

biggest driving force is that idea of treading lightly. You know we're really aware that even living here, which is a fairly simple lifestyle, we're still living a lot, you know, we're living a pretty decadent lifestyle if you compare it to probably 95% of the world (Sandy, ~5 years).

The changing meanings Janelle observed amongst newer members are consistent with the broader evolution of social ideas of environmental responsibility, as environmental destruction has been replaced by climate change and unsustainable growth as key concerns.

Economic independence

Janelle's recollection of the ideas behind the principle of economic independence was that Bundagen would be *'debt free and that we would aspire to be independent'* (Janelle, 36 years). Others expressed similar sentiments in interviews, about avoiding consumerist society and the 'treadmill', that indicated that these ideals were still present and current in Bundagen. Allan, for instance, felt

that by having access to cheap housing, and being able to grow much of his own food, gave him more choice about his lifestyle:

I'm not, in a way, on the treadmill, which is very much a part of the idea of Bundagen is that you didn't get on the treadmill. You didn't want to get into debt... you were free in that sense. And I guess that's part of that economic independence... that by being able to live here you can live more independently (Allan, 34 years).

Economic independence as a founding principle indicates that economic meanings are also strong influences within the community. For some, particularly some of those that bought shares in the community because it was a cheap means of accessing housing, they may be some of the strongest motivating ideals. However, for many people, cheap housing was described as an important aspect in a set of values and meanings about living lightly, and in a more responsible manner. These values were then formalised in the cooperative structure and policies of the community. Allan thought that because people didn't own the land, there was an incentive to have a smaller footprint:

people perhaps don't overcapitalise here, they maybe live more lightly on the land because of that (Allan, 34 years).

Ideas of economic independence and freedom from debt weren't always discussed by the Bundagen residents when discussing sustainable living, yet they were meanings that influenced many of the daily practices of the residents in fundamental ways. Ideas of downshifting, of trying to avoid consumerist society as much as possible, of 'different ways to look at being wealthy' (Allan, 34 years) were common amongst residents.

Social Harmony

The other guiding principle of Bundagen was social harmony. Ideas of social harmony and equality can be seen in the amount of shared land in the community, and the legal structure of the community as a rural co-operative in which each member has an equal voice, and the community jointly owns all improvements on the land. Whilst this is in no means a guarantee of harmony, it indicates the intent of the group. The use of a modified form of consensus decision-making also indicates an attempt to satisfy all community members when making group decisions. The governance and decision-making aspects of the community will be discussed further in Section 6.3. The principles of striving for social harmony were still very relevant, and had appealed to some of the newer residents. Phil felt that Bundagen had managed to create strong social capital within the community, and Jane felt the principle of social harmony was a more important factor in her decision to join:

my main motivation back then was about low-cost living and the social stuff. The environmental stuff was important to me but it wasn't the driver (Jane, 12 years).

One statement that seemed to capture the values of many residents interviewed was the idea that:

the most powerful form of activism, I suppose, is just the way that you live (Sandy, ~5 years).

Bundagen was created out of activism, and still for many residents represented a forum and an expression of personal activism.

Material

The formation story of Bundagen (see Section 6.2.1 and Appendix G) makes it clear that a crucial material element in shaping the creation of the community was ‘the land’. This is the case with any intentionally sustainable community, as they are by their very nature physical creations. It is the taking of a space and building upon that space that transforms the community from an activist network, or an idea of an alternative lifestyle, into a reality. Without the material, the powerful activism of ‘the way that you live’ cannot happen in the way that Sandy was describing.

The particular properties of the Bundagen land shaped the creation practice also. It inspired early members to act to protect its beauty. It was located on the coast, and to some extent that affected the people that joined the group – it influenced Chris’s decision to join. The land had only been selectively cleared for farming which meant there was open space that could be built upon already present, as well as preserved natural bushland; it was ‘*an ideal piece of land for a community*’ (Chris, 36 years). Just as important as the land were the people who became the Bundagen community, and the money they provided to enable the purchase of the land. Whilst this was not discussed in the interviews, it is quite possible that acquiring the finance for the land in small amounts from a large number of people had a strong influence on the eventual form that the Bundagen community took – as a rural co-operative with a large number of members living on the land. In the early stages, often multiple people split the cost of a single share, because the original idea was to first save the land.

Competences

Creating an intentional community is an extremely difficult task, with the majority of communities only lasting a short time (Metcalf 2012) and anecdotal stories of stalled or unsuccessful communities are common (Metcalf 1995). The Bundagen group managed to collectively purchase the land and then create a community that is still functioning 30+ years later. This required competences in group organisation, navigating the legal and bureaucratic systems to create the cooperative legal structure and raise money from a large number of people to purchase the land. These competences did not have to be carried by all community members, only to be present within the group. As discussed, some members had previously lived on other intentional communities prior to becoming part of Bundagen, and so brought with them know-how based on that experience. As there is a rich

history of intentional communities, and international and national networks, there are means to share competences between various communities.

Bundagen originally formed a company to buy the land, with the ownership later being transferred to the Bundagen cooperative legal structure in 1984, with individual members buying shares to become cooperative members. All members of Bundagen own a share of the cooperative. Members are divided into resident members who live on the community, and non-resident members who own a share but either never moved on to the land or have moved off without selling their share. There was a period of consolidation of shares during the early years as some people decided they would never live in the community and sold off their shares. The membership process is discussed in Section 6.2.4 and Appendix G.

6.2.3 *Designing the community*

The story told through the interviews of the design and construction of the community, once the land was purchased, is one of a mix of idealistic planning and pragmatic realities. At the formative gathering of the Bundagen community on the June long weekend of 1981, the Storyboard group had prepared a series of maps for display outlining various aspects of the site, including: vegetation, soil, water resources, habitat, intrinsic site suitability and one suggesting a draft village layout. They had also arranged guest speakers in various fields of expertise to expose community members to different ways of doing community design e.g. environment, planning site layout based on hamlet development, multiple occupancy workgroup and legal frameworks, and low-cost homebuilding using natural resources, etc. (Chris 2017, pers. comms. 3 July). The members worked across a number of scales, considering the layout of the whole community, the individual villages, 'expanded houses' within the villages and individual house design.

Community design

As the community members were the ones planning the community, the Bundagen principles all influenced the physical and organisational design. The exact motivations and plans followed during the designing of the community differ to some extent as people have different memories of events, and many things were not written down or archived. However, ideals of independence, self-organisation, self-sufficiency and conservation are all ideas that are reflected in the creation of Bundagen. It was clear from the interviews a strong feeling amongst the early members that they could do something better with the Bundagen Headland than the developers or government would. As a cooperative landholding, the Bundagen Cooperative owns all the land, so technically all the space on the property is communal space. Members do not personally own the land their dwelling sits upon, nor the garden space around it. This was an intentional decision, with members wanting to see themselves as *'caretakers of a community rather than owners of the land'* (Allan, 34 years). This

cooperative ownership significantly improved the affordability of the land (original shares were \$3,000 each), greatly contributing to the economic independence of the community members.

Whilst the land was all communally owned, in practice the community is divided into areas that operate as communal space, spaces shared by each village (the sub-unit of organisation within the community), and each household has what is known as a 'sphere of influence' over land surrounding the house.

The land is divided into 12 village areas: Outback, Hamlet, Gunnadoo, Gunnadoo Heights, Matakana, Promised Land, Bananas, South West, Cuckoo's Nest, South East, Bundageree South and Bundageree North as shown in Figure 6.3. The plan for the villages was described as wanting to cluster houses together and keep parking on the perimeter to minimise the land area required for households (minimise the footprint of the built environment) and create a village feel. The planning of Bundagen around clustered villages represents a material expression of social and environmental values that existed within the community. Other communities established in that era such as Moora Moora in Victoria (Moora Moora Co-operative Community 2017) used similar ideas of clustering houses, and these concepts can also be seen in the cohousing principles around reducing the amount of land dedicated to built environments, as well as encouraging informal social interaction between neighbours (McCamant & Durrett 2011; Williams 2005a).

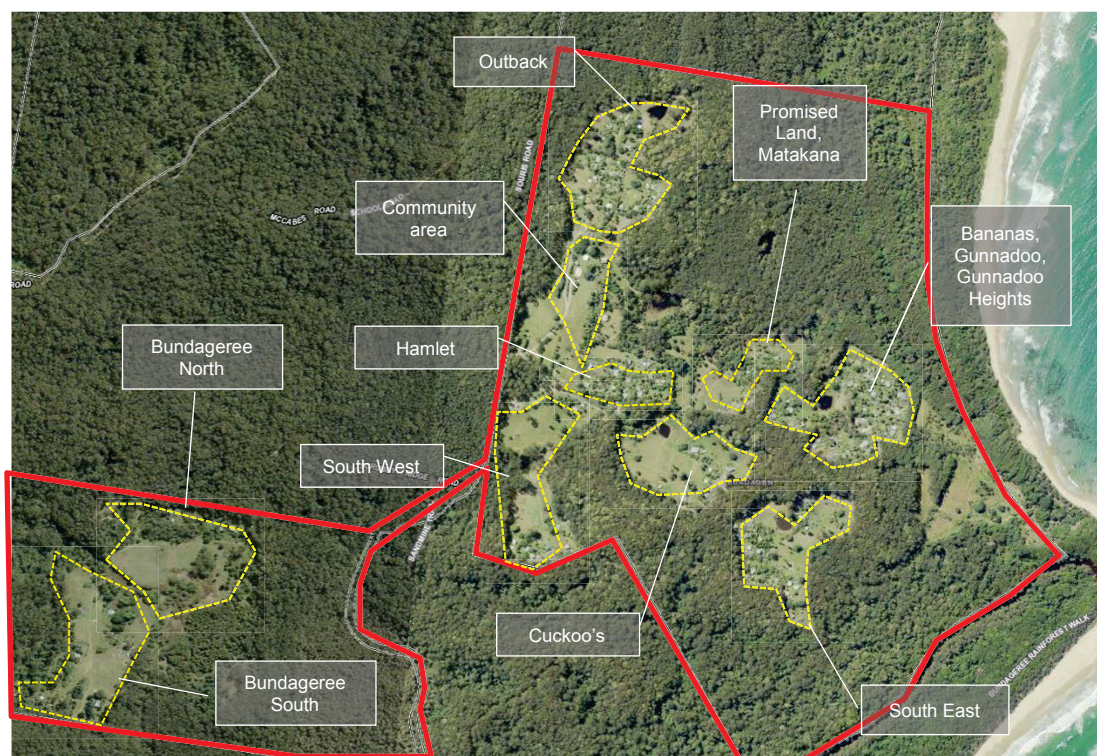


Figure 6-3: Layout of House and Village Zones in Bundagen as of 2012

The cooperative nature of the community impacted the material aspect of the community design. One of the big material differences between Bundagen and other more standard neighbourhood developments is the great number of facilities, spaces and resources shared by the community. All the land is legally shared property, however there are particular spaces that have been allocated as the community area.

The most significant communal space is based near the entrance to Bundagen, where the original farmhouse was on the property. It is known as the Main House area, although it actually consists of a number of buildings. There is the Main House, which contains a commercial kitchen and entertaining space. For a long time a weekly café open to the general public was held here every Tuesday, however that has ceased due to concerns about public liability. There is the community school building, which at one time ran as a community primary school, but is now used for meetings and other events, as well as the co-op office and library. Other communal buildings included an outdoor games room, meditation and yoga space and fire station building.

The communal ideas of the founding members are expressed in the shared spaces and buildings of the community. These spaces continue to act as key elements that facilitate and perpetuate the communal and social ideals, and build the social capital of the community. It continues to be an aspect that attracts people to the community, as Phil discussed:

the next thing that appealed to me... was the social factor, the fact that we choose, that Bundagen chooses to have small houses as opposed to McMansions and that, and having... a lot of communal spaces, whether it's man-made structures or just the environment itself, that really appealed to me because immediately I saw what just the... I guess you could call it social capital, gave to people, and it was immense. So the fact that anybody has access to the main house and, you know for instance we're sitting on the verandah, there's a playgroup happening inside, there's somebody using the kitchen facilities, it's a vast resource used by many and all for our gain, but yet we don't have to have a massive house where we feel the need to do all that under the one roof (Phil, 10 years).

Village design

The sub-organisational structure of the community allowed different cultures to develop even amongst the villages, so there was quite a large diversity of style and structure between villages. The organisation by village was mentioned by a number of people as an aspect of the design of Bundagen that had positive effects on the social life of the community. As Allan described:

Because it is organised into villages... you're having a lot closer interaction with more people. So, it's a very social place, and I think that's, perhaps one of its main functions (Allan, 34 years).

The village is a very important aspect of the design of Bundagen. As one resident described it, Bundagen has an 'urban-rural' feel (Greg, 36 years).

The Development Approval (DA) with Coffs Harbour Council (the local government) allowed for 59 houses in total on the land, however the community has an agreement with the council about the use of an 'expanded house' concept, which is uncommon in zoning laws controlling developments in the state. As described in the Bundagen By-Laws:

Within Villages, members are grouped in expanded houses of at least 2 dwellings which make one expanded house. Expanded houses must share some facility, such as a toilet, bathroom, laundry etc, which must be within 75 metres of each dwelling (Bundagen Community 2015).

In effect, a number of individual dwellings act as a module of a specific expanded house. This means that the village clusters must have shared facilities such as laundry, toilet and/or showers. Gardens are usually kept individually, although there are some examples of shared gardens, and parking varies from personal parking by the home to shared car parking on the village periphery making for park and walk. The shared facilities within the villages act as regular sites of informal social interaction for the residents, as well as minimising the duplication of a number of household facilities. Several goods and equipment are also shared within the communities, such as mowers, trailers and waterpumps. This gives all residents access to these resources in circumstances in which they otherwise may not have had access, as the competences that are required for maintenance of shared facilities and equipment can be unevenly distributed amongst residents. This concept of the collective pooling of competences will be returned to later in the thesis.

Bundagen resident members do not own the title to the land on which they build a dwelling. Instead, they are allocated an area within a particular village that falls within their 'sphere of influence'. In the same way, people buying and moving into an existing residence would get a 'sphere of influence' that came with the property. 'Spheres of influence' were more of a generally understood idea to the community members, rather than a clearly defined concept. The Bundagen By-Laws contained maps showing the area that was designated as the 'sphere of responsibility' (the formal word that has been colloquially adopted as sphere of influence) of each village, but this appeared to be the extent of any formal description. Instead, a household's sphere of influence would depend on a myriad of factors such as the proximity of other households, the contours of the land, locations of walking paths and roadways, locations of shared facilities such as laundries and toilets, the proactiveness of the household in working (i.e. planting food) within their sphere, and even the relationship between the household and someone who may encroach on the sphere.

House design

Before dwellings can be constructed at Bundagen, there are a number of levels of community approval that must be gained, on top of the Council approval required by all dwellings in NSW. Building plans must be approved by a village meeting and a community meeting, before being signed off by Bundagen building, fire and environment coordinators. The guidelines for siting and design of structures, and the materials used in their construction specifies that they should be appropriate for a community committed to:

- a) Low environmental impact,
- b) Frugality in consumption of energy and other scarce resources,
- c) The use of recycled and renewable resources,
- d) Sensitive regard for aesthetic considerations and the creative innovative blending of materials into the landscape,
- e) The use of alternative forms of energy, wherever possible and appropriate, and
- f) Clustered (*expanded houses*) rather than dispersed settlement and a predominance of shared facilities rather than facilities which are duplicated in individual structure units (Bundagen Community 2015).²⁶

There are often many comments from community members about building plans, with people commenting on building materials and size, for example (Jenny 2017, pers. comms., 15 June). Within the bounds of these guidelines there is therefore a huge diversity in housing type across the community, with many of the dwelling designs making use of natural materials and taking inspiration from the surrounding nature. Homes in the community ranged from tiny one-room shacks to relatively standard 3-4-bedroom timber or mudbrick houses, to converted buses²⁷. The responses to the ecological footprint survey indicated that alternative, natural and recycled building materials are commonly used, such as mudbricks and recycled timber. The sizes of homes within this sample (representing 15% of households at Bundagen) ranged from 10m² to 150m², with most being less than 100m².

A particularly important aspect of the material design of Bundagen was the setup of the various systems of provision of basic services within the community. The community is independent of the local electricity, water and sewage networks. The details of these different systems will be discussed later in this chapter, but these early design decisions were extremely important in reducing the

²⁶ Taken from By-Law 11.2.1 Siting and Design (B.4.3), which notes this guidance is taken from *Bundagen DA 1984*. (4/84)

²⁷ The book *Shelter* (Kahn 1973), showing many styles of organic and self-built architecture from around the world, was mentioned by some as an inspiration for some of the building that took place on the community.

environmental impacts from household resource consumption for the community members over the long term, which was something that Jane noted:

So the thing about living here it is it that all the other environmental footprint stuff has been reduced for me simply by being here. So being off the grid for everything, you know. Being in a community of people who are growing food and so on (Jane, 12 years).

These kinds of technological infrastructures inscribe certain patterns of resource usage into household practices that can be difficult to alter with individual practice. However, as a group Bundagen was able to express the idea of creating a community where people could be independent of mainstream society, and take responsibility for their own environmental impacts.

Many elements of competence are involved in designing and building a whole community, aside from the legal, financial and ownership aspects mentioned in the previous section. Many of the original Bundagen members carried knowledge from living in other intentional communities, and what did and didn't work with those communities. In addition, many of the people involved with the planning of the community had relevant skills from their professional backgrounds. The formation group also organised seminars and presentations to equip members with relevant competences (Chris 2017, pers. comms. 3 July). This professional and community experience, along with others with the motivation to research new ideas and technologies, allowed unusual and innovative ideas to be developed within the space created by the new community.

6.2.4 Comings and goings – community growth and contraction

As a cooperative, Bundagen members are in the position to control who is eligible to buy shares, and therefore have a certain ability to manage who joins the community. This is important for Bundagen to ensure new members are happy to live in accordance with the community principles and policies. Although as discussed previously, there are many members of the community whose commitment to the principles is questioned by others in the community. The ability to control who joins is unusual for mainstream communities such as a strata-titled²⁸ apartment block, a certain street or a small town, but common amongst intentional communities, and practices have developed around how this growth and contraction occurs.

There is a long and involved process for vetting potential future members at Bundagen, with candidates spending months or years living in the community as 'visitors' before the village and community vote to allow them to become full members. Further details are provided in Appendix G. This means that at any time there are a number of short and long-term visitors residing in the community. Short-term visitors may be in the early stages of exploring the idea of joining the

²⁸ A form of titling for the legal ownership of multi-unit dwellings with shared areas first introduced in NSW, Australia in 1961.

community, whilst the long-term visitors generally want to join and are waiting for a place to become available. This process allows the community to judge if someone is likely to be compatible with Bundagen's idea of community living, as well as if Bundagen's idea of community living is compatible with them. Versions of this kind of practice are common amongst intentional communities²⁹, to see if potential members are compatible and vice versa.

Technically there is also a process in place to expel someone from the community if that was an agreed upon course of action, however the only discussion about this process was to describe the difficulties faced when trying to get a visitor to the community to leave, so it was not a route that had been pursued often by the community.

Managing who comes and goes from the community had become a recognisable practice. Similar sized neighbourhood communities in mainstream communities rarely have the opportunity to influence who joins the community in such a way. There are exceptions, such as company-title apartments, or community-titled rural landholdings. Community title in particular is often also associated with intentional community type groups. The practice of influencing who joins the neighbourhood is important for Bundagen to maintain a cohesive community, one that operates with respect to the guiding principles of the community. It also recognises that community life is different from the mainstream, and people need to understand what they are committing to. In effect, the process is set up to ensure members carry enough of the shared meanings that guided the formation and continued existence of the community. The long vetting and induction process when prospective members live in the community but aren't full members provides an opportunity for potential members to be exposed to the various practices of the community, and the meanings that exist in the community, to ensure that they are, or become, carriers of these meanings.

6.2.5 *Summary*

This section has discussed a whole bundle of practices that were significant in the making of Bundagen as an intentional community. There are many meanings, competences and material elements that differentiate it from more mainstream communities, where the residents do not play such an active role in the creation of the social and physical entity of the 'community'.

The intentional community creation is important as the community scale of design, coordination and governance has implications for many everyday household practices. These community creation practices are not necessarily ones that are directly linked with a reduction of ecological footprint, or environmental impacts, although some of the principles and design decisions do have clear links. They are more closely related to some of the other indicators of sustainable consumption

²⁹ See for example the membership process for Moora Moora Co-operative Community in Victoria <http://mooramooraa.org.au/membership-97236>

suggested by Seyfang (2009): community building, collective action and creating new systems of provision. These practices are also unusual because of who the carriers and practitioners are – the future community members. Some of the key facets of these practices are outlined below, and summarised in Table 6-1.

Creation and design of home and community:

This is an uncommon practice, both in terms of the creation of the community as a concept and social group, and the physical design and materialisation of the whole community by the residents. Most communities, or community developments, are created by developers, either government or private, and sold to the future residents on the speculative market. The Australian housing market is dominated by commercial production (Crabtree 2016), with most householders buying existing homes in existing neighbourhoods or new homes in new developments. Whilst it is not uncommon for people to buy blocks of land and have a new house built on it (or even build one themselves), for many scores of people to organise together to plan and create their own community or housing development is rare; although not unknown. Through the community creation, the Bundagen members are becoming practitioners of practices which are normally the preserve of development and planning professionals, but instead are being performed by the people who will live in the community and households they are creating and designing. Whilst the process of forming an intentional community does not guarantee that sustainable consumption initiatives and infrastructure will be developed, it does allow a group more freedom to create a community in line with their visions. For Bundagen, this included pro-environmental goals. The community created physical, social and institutional infrastructures and policies that have influenced the performance and evolution of many of the everyday practices that are discussed in the following sections.

Induction processes:

Also significant is the long induction, or 'visiting', practice used by the community when people look to join. This differs from the usual way people would move into a neighbourhood when buying or renting a dwelling³⁰, when the members of the surrounding community would have no influence³¹. This practice gave the community a mechanism to maintain the integrity of the vision by choosing to accept new members who were comfortable with adopting the meanings and shared understandings of the proper conduct of everyday life as agreed at Bundagen. This is particularly important given the practice of community governance that will be discussed further below, which gives everybody a voice in how the community is managed. Also, like the visioning that will be

³⁰ The legal structure of Bundagen as a cooperative meant that houses within the community weren't sold on the open market. Anyone wanting to buy a property and move into the Bundagen Community had to first become a member of the cooperative, and the other cooperative members could vote on who was allowed to become a member. These rules are inherent in the cooperative model, and allowed the community members as a collective to have the final say on who joined.

³¹ Some forms of title e.g. company title in Australia, do allow other shareholders to have some influence.

discussed below, this practice serves as a mechanism for spreading competences and meanings of importance to the community. So, whilst not inherently an environmentally beneficial practice, it was an important part of the overall system of practices in existence at Bundagen.

Table 6-1 summarises all the community creation and formation practices discussed in this section, and highlights the key elements that were either crucial in the way the practice was performed at Bundagen, or most significant in the way that practice differed from more mainstream forms of the practice. As well as this, the table also comments on the type of innovation or intervention occurring within the practice, and the sustainability significance of that practice.

Table 6-1: Key practices and elements in the creation of Bundagen Community Cooperative

Domains - Creating home / community					
Practices	Elements			Type of intervention into 'mainstream' practice	Sustainability impact of practice
	Materials	Competences	Meanings	(Spurling & McMeekin 2015)	(Schanes, Giljum & Hertwich 2016; Seyfang 2009)
Creating an intentional community (Bundagen)	<ul style="list-style-type: none"> Land with high environmental value Money to purchase the land Geographical location Communally owned land 	<ul style="list-style-type: none"> Skills to turn ideals into visions and plans Group organisation, and working collaboratively Legal, planning and financial skills Experience in communal living Experience in activist camps 	<ul style="list-style-type: none"> Shared Meanings Creating a social and cultural alternative to mainstream society Social harmony Environmental responsibility and conservation – caretakership of the land Economic independence – debt free and independent Treading lightly Self-sufficiency 	<ul style="list-style-type: none"> Changing the sequencing in the process of community and home creation (changing how practices interlock) 	<ul style="list-style-type: none"> Providing an alternative system for the provision of housing Community building by developing social networks around building the community / housing Collective action – strong sense of acting collectively, enabling collaboration to make effective decisions about things that effect their lives
Designing an intentional community (Bundagen)	<ul style="list-style-type: none"> Existing land Use of natural materials Creation of material infrastructure Clustered housing design Shared communal spaces 	<ul style="list-style-type: none"> Town planning knowledge Organisational structure of community 	<ul style="list-style-type: none"> Bundagen principles, particularly environmental responsibility (Minimise footprint of built environment and veg clearance) and social harmony. Designed by future residents – community members Independent from the mainstream 	<ul style="list-style-type: none"> Substituting practices, changing who performs the development of a 'community' 	<ul style="list-style-type: none"> Community building by developing social networks around building the community / housing Collective action – empowering people with groups Localisation by increasing use of DIY and local materials Use of efficiently produced products (low embodied energy) – e.g. mudbricks Minimisation of land clearing
Community formation (joining and leaving)	<ul style="list-style-type: none"> Ample space for visitors Houses for housesits 	<ul style="list-style-type: none"> Long induction process to ensure compatibility Understanding that community is not for everyone Experience with communal living / community groups Skill sharing 	<ul style="list-style-type: none"> Voluntary simplicity Creation of a community – isolation of city life Access to cheap housing Desire for self-sufficiency 	<ul style="list-style-type: none"> Substitution – the introduction of the practice of induction into a new situation of joining a community 	<ul style="list-style-type: none"> Community building by encouraging (requiring) participation in the community organisation Circulating competences and meanings with new members

6.3 Governing home and community

Bundagen is by design both intentional and reflective in nature. It was created by the members, and the ongoing management and governance of the community is the responsibility of the members. The creation also sets up certain structures, such as policies, rules, legal structures and physical infrastructures, that then influence how everyday life, and communal living happens within the community throughout its lifetime.

The following section will look at the bundle of governance practices which are illustrated in Figure 6-4, focusing on aspects of decision-making and visioning.

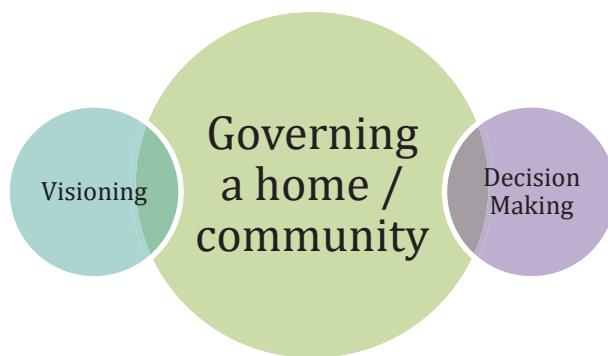


Figure 6-4: The domain of governing home and community and the specific practices discussed in this section

The governance of the community is set-up so that all members have a chance to discuss and have their say on all matters that affect the community, whether minor or major. Community meetings are held monthly to deal with everyday matters, whilst major issues are reserved for quarterly general meetings. Meetings are open for all members and visitors to Bundagen to attend, however only full members are allowed to vote on decisions. The community has a modified consensus decision-making process for meetings, and the aim is to discuss issues until a decision can be reached that all members can agree upon. This kind of deliberative decision-making practice occurs on a wider basis than just in intentional communities like Bundagen, so it is not a distinct practice. However, the setting in which it occurs, within a meso-level neighbourhood, is distinctive. The decision-making process is discussed more below.

Ongoing management and administration of the community is undertaken by a group of fifteen coordinators who are elected annually. They also have monthly meetings (separate from the community meetings) and look after specific areas of community administration. These areas of responsibility include: secretarial, treasury, legal liaison, environment, membership, building, fire,

water, roads, social as well as others. These coordinators will often have separate committees to meet with interested community members.

All adult residents of the community (members or not) pay a weekly levy of \$25 to finance the community's needs. This goes to caring for shared equipment and shared spaces. There is no work requirement for community members, however residents can undertake work for the community that counts to reduce the levy they are required to pay. Work can range from treasury and bookkeeping work to weeding and Landcare.

Multiple residents commented on the work involved in managing Bundagen. The community is still governed by the normal rules and regulations of the local government, as well as state and national laws. In effect, there is an extra layer of bureaucracy involved with self-governance of the community. There is some irony in the way this has developed, given the ideas of 'dropping out' from mainstream society that were prevalent in the counter-culture that gave rise to so many intentional communities in the 1970s. As Rejane highlighted:

we've got a book this big of our own rules and regulations that we've developed over the years, so in actual fact we ended up [with] much more, it's like in a tribe you know... there's a lot of rules, lots of rules (Rejane, 26 years).

Whilst this may have been difficult for some people in the community, for many it was an intrinsic, and positive, feature. A number of people discussed the high level of resident involvement in community governance, of 'being involved more directly in decisions that affect you', as one of the unique points differentiating Bundagen from 'living in the suburbs' (Allan, 34 years). For Allan, this was much more empowering than just voting every three or four years in local council elections:

here you can be much more involved in the decision-making process, and yes we might be reinventing the wheel in a lot of ways, but you do feel I think that you can create more of the type of environment in which you like to live (Allan, 34 years).

Bob was also quite positive about the importance of community self-governance, whilst acknowledging that there was room for improvement:

I have to say I think we've got a healthy, a healthier way of being bureaucratic you know what I'm saying, a more humane way of being and dealing (Bob, 33 years).

The various regular meetings give the community members opportunities to have their say on what activities occur within Bundagen, as well as propose initiatives and seek support from the community. This can be a difficult process, but as Allan discussed, it can also be empowering. Regular meetings would appear to give the community a very appropriate tool for attending to the ongoing evolution of everyday practices within the community. For example, at the time of this research a number of people were organising a food production working group to address what they

perceived as not enough food being produced at Bundagen given the land and resources at their disposal. This will be discussed more in Section 6.5 on food provisioning practices below. Another practice that appears particularly powerful for the long-term governance of the community is occasional community visioning exercises. Both visioning and the community decision-making processes will be discussed in more detail below.

6.3.1 Governance and decision-making

A modified form of consensus decision-making is practiced in Bundagen, giving everybody a say in the governance of their community. This is a practice that the interviewees' thought was integral to the functioning and cooperative nature of the community. The number, and sometimes length, of meetings that were held to discuss community issues was also seen as one of the largest burdens on the cooperative community lifestyle. The conflicting feelings, but general pride in the communal, consensus decision-making ideals of Bundagen are summed up well by Trevor:

Where in history would you have a grassroots democracy, anybody can bring any sort of proposal to a meeting, sometimes you wish my God I wish they wouldn't but they can bring any sort of proposal... and you can make a decision on it and politicians promise things here [in Australia] and don't even deliver on their promises so here you've got actually direct [democracy], you can come to a meeting and put it and see what happens, I think that's amazing cause when you read history it's very rare, very rare (Trevor, 33 years).

Full details of the decision-making process are given in Appendix G. As Allan describes when talking about community meetings, they act as a very important forum for the dispersal of ideas, the sharing of both meanings and know-how, amongst the community on a regular basis. The community:

operates as a large body of people, see you get sort of a lot of cross-pollination, a lot of ideas get hammered out, and it can be difficult to try and get to some kind of consensus decision, out of all that, but it certainly allows a free dispersal of ideas (Allan, 34 years).

There is an apparent conflict in key ideas at the heart of the governance of Bundagen. There is the desire to be independent and self-managed, for many reasons. As Rejane said:

a lot of people they join a community like this one because they want to get away ... because they want to get away from the society out there (Rejane, 26 years).

But at the same time, there is the cooperative ideal, of owning land in common and making decisions by consensus.

We're very aware of each other you know that we are part of a group, a little group in a village and a big group in a community... and that we are caretakers of the land and

I think we're, you don't sort of make decisions that, unless you've spoken about things to your neighbours, that might be a bit dicey (Jenny, 33 years).

It seems that the consensus-based deliberation process is crucial in allowing these apparently conflicting meanings to not only co-exist, but work together to allow the community members to be more independent by working together. Consensus means that if a member is strongly against a certain decision, they have a lot of power to prevent it from occurring, so maintain a strong sense of independence. At the same time, the deliberative approach can be an effective way of sharing certain ideals amongst members of the community, so that community members are able to make decisions about things that affect their everyday lives, and those of their neighbours, in a way that is highly informed of the potential impacts.

There are a number of different competences involved in the regular meetings and consensus decision-making process. Some competences might already be carried by residents from other everyday practices, such as meetings in work environments. However, it is unusual for neighbourhoods to hold regular meetings to decide upon very real and practical aspects of community life, such as the need for or location of a large chicken coup, or whether to legally protect the community land as a land trust. The consensus (and modified consensus) decision-making process is not one regularly seen in mainstream settings. Amongst the intentional communities network there are some formal and informal resources³² for running meetings using consensus models. An important aspect is using conflict resolution and mindful communication processes and skills to allow people to express disagreements in a way that leads to constructive meetings. Bundagen has a number of formal meeting procedures, such as coloured cards that people can raise to silently signal a desire to disagree, build upon, or question something a speaker is saying. The community has also created different meetings, as well as committees, to divide issues and proposals in a way that hopefully allows issues to be discussed in the appropriate forum.

There is a large body of literature regarding deliberative decision-making processes, with generally positive outcomes. The consensus approach means that participants are required to publicly justify and explain ideas that they are presenting to the community, seeking to change the minds of those who might initially disagree. This provides a particularly effective way of circulating different meanings amongst the community, with evidence suggesting that deliberation can be particularly effective at building shared values and understandings amongst a group (Stevenson 2016).

³² Such as from the Groupwork Institute (<https://groupwork.com.au/>) which formed out of the Commonground Community (<http://www.common-ground.org.au/about/>)

6.3.2 Visioning

Visioning is an example of a practice that only occurs occasionally, but can have an extremely important impact on the spread of elements of meaning throughout the community, and guiding the overall direction of the community.

The early establishment of three guiding principles for Bundagen indicate some kind of visioning process occurred early on. Chris indicated that the guiding principles were developed during the time of the Middle Head sand mining protest camps in 1980, when hundreds of people were interacting together, and regular 'circles', their word for meetings, were being held.

In 2014, the Bundagen community came together to hold a weekend long visioning forum, called 'Rejuvenating Bundagen'. In Rejane's words, this was designed to look '*where we were [for] the last 30 years and where do we want to be in 30 years' time*' (Rejane, 26 years). Many interviewees commented positively about the visioning forum, describing it as injecting new energy into the community.

But we just had a visioning workshop here just the other week and it really signposted another phase in this community which we're about to embrace, because there was actually a lot of goodwill and I feel genuine energy coming out of that that may actually materialise (Phil, 10 years).

The visioning was designed to give an opportunity for people associated with Bundagen (including visitors and resident and non-resident members) to explore issues or opportunities which they felt passionate about with other members of the community who shared the same interest. The issues discussed at the visioning were decided by the participants, with people able to contribute to any session they wanted to. Issues discussed ranged from 'Food production and an expanded food co-op' and 'economic independence and sustainability' to the 'implications of aging and volunteering in the community'. The summary in the Bundagen Newsletter described the result as 'upbeat discussions of much interconnected issues and a lot of cooperative actions to carry them forward in the immediate future' (Bundagen Community 2014).

Some topics were noted as being more prevalent at the visioning than during the formation of the community. Aging was obviously one that has become more relevant to residents in the 36 years since community formation. Sustainability was another: '*at the visioning I noticed that sustainability was a really big topic for people, there was quite a lot of work groups on that*' (Janelle, 36 years). During the formation of Bundagen, environmental responsibility and economic independence were of more relevance to the community.

Visioning practice had an important role within the context of a community. It was a key pathway for the sharing of meanings between members, and particularly in collectively establishing and formalising more significant shifts in community ideals and focuses.

However, the meanings and competences of the people within a community will naturally change over time, as will the material attributes of the community. There was a feeling amongst the older residents of Bundagen of running out of energy to make any changes in their community, of feeling burnt out. This might represent a feeling of being less committed to the original vision, or that they had done all they could to achieve that vision. At the same time, some of the newer members expressed some frustrations at the difficulties in trying to enact changes within the community. It is understandable that there would be differences between those in the community who were involved in the creation of the community, in creating the overall vision and participating in the decision-making that formed Bundagen, and those who came later. The different experiences could cause tension between those who already 'knew' why a certain suggestion had been adopted or abandoned (e.g. creating a school in the community) compared with those who had not been part of that experience and wanted to give it a try. In this situation, a collective visioning process can play a very important role in sharing meanings and understanding between community members, re-energising the whole community.

6.3.3 *Summary*

This section has discussed a number of practices that were significant in governing Bundagen as a participatory, cooperatively managed intentional community. There are a number of meanings, competences and material elements that differentiate it from more mainstream communities, where the residents do not play such an active role in ongoing governance. Like the community creation practices, these are more closely related to some of the other indicators of sustainable consumption suggested by Seyfang (2009), particularly community building and collective action. Some of the key aspects that mark community-level governance and visioning practices as uncommon interventions in everyday practice are highlighted below.

Community level governance:

The collective governance of the community has implications for many of the everyday household practices that are discussed in the following sections. This domain of practice, which involved all members of the cooperative in governing their community through regular community and general meetings, as well as smaller meetings for sub-groups and working parties, gave the residents a chance to be directly involved in the decisions that affected their everyday lives, with a greater ability to shape their environment. This domain of practice incorporated many practices recognisable to the residents; such as meeting, presenting and discussing proposals, voting and

preparing and distributing minutes. Consensus decision making is not a unique practice, but it is uncommon to be used in decision making for a small neighbourhood of ~150 people. Apartment buildings in Australia are commonly governed under the requirements of a strata title arrangement. They can range in size from two units to more than 800 dwellings in large complexes. Strata schemes are governed by the elected executive committee of the owner's corporation, however often not all owners have equal voting rights, as these are related to the relative value of the strata (Randolph & Easthope 2007). Local government in Australia is the third tier of government (below state and Federal), and uses a representative democracy model. Whilst some local government areas in Australia have a population of a similar size to Bundagen, they are generally extremely large, remote and sparsely populated regions that are not directly comparable³³. Therefore, the existence of a consensus decision making level of governance between the scales of the individual household and the local government (i.e. Local Council) is an example of a practice being performed in a novel situation.

Some of the key elements required are summarised in Table 6-2. There is also a reinforcement loop in effect, whereby successful participation in the community governance can encourage greater participation. This can encourage participation, but could also have the opposite impact and discourage other community members. This practice may not have directly impacted the consumption footprint of any community members, but it was vital in allowing the community to act as one entity, with the power and scale of 150 people when making certain decisions. It also appeared to be a fertile area for the circulation of meanings and competences amongst group members.

Community visioning sessions:

The process of collective visioning, planning and reflection is a commonly discussed practice in organisational, public policy and community planning literature (Boswell, Niemeyer & Hendriks 2013; Cuthill 2004; Cuthill & Fien 2005; McArthur 1995), yet whilst it's prevalence is increasing, it is not usually performed by a group of households sharing a neighbourhood. As Bundagen was formed over 30 years ago, the types of reflection that occurred with the founding principles in the early days of the community were lost in memory.

However, they had recently run a visioning weekend that was described as having an energising effect on many of the community members. It gave newer members of the community an opportunity to provide input about the direction the community, whilst energising longer-term

³³ These councils are classified by the Australian Classification of Local Government as Rural Remote Extra Small, with populations under 400 people (Department of Infrastructure and Regional Development 2003). For example, the Shire of Upper Gascoyne in Western Australia had a population of 285 in 2006 (https://en.wikipedia.org/wiki/Shire_of_Upper_Gascoyne). However, it is also almost 58,000 km² in size, so it is not really comparable.

members³⁴. Visioning sessions are not inherently pro-sustainability, however in the Bundagen experience they were enabling processes in establishing shared understandings of the proper modes of conducting everyday life. For Bundagen this emphasised sustainability and living in an environmentally sensitive manner.

Table 6-2 summarises all the governance practices discussed in this section, describes the type of innovation or intervention occurring within the practice, and the sustainability significance of that practice.

³⁴ Performed a different function to the regular meetings that were focused on maintaining the function of Bundagen rather than future thinking.

Table 6-2: Key practices and elements in the management of Bundagen Community Cooperative

Domains - Governing home / community					
Practices	Elements			Type of intervention into 'mainstream' practice	Sustainability impact of practice
	Materials	Competences	Meanings	(Spurling & McMeekin 2015)	(Schanes, Giljum & Hertwich 2016; Seyfang 2009)
Decision Making	<ul style="list-style-type: none"> • Communal facilities for large groups to meet • Meeting cards 	<ul style="list-style-type: none"> • Process of managing group meetings • Understanding of consensus decision making • Skills in public reason-giving • Conflict resolution skills • Mindful communication skills • Formal meeting procedures • Delegation to committees 	<ul style="list-style-type: none"> • Residents desire to manage their own lives • Importance of working together as a community • Everyone should have a voice – value of grassroots democracy 	<ul style="list-style-type: none"> • Substitution - Practice enacted at the neighbourhood level – in a novel situation 	<ul style="list-style-type: none"> • Community building – encouraging participation and building social networks and capital • Collective action – enabling collaboration to make effective decisions about things that effect their lives • Mechanism for circulating meanings and competences
Visioning	<ul style="list-style-type: none"> • Communal facilities for large groups 	<ul style="list-style-type: none"> • Use of 'open space' principles • Formal visioning procedures and note taking 	<ul style="list-style-type: none"> • Importance of reflection • Value in planning together • Creation of shared understandings 	<ul style="list-style-type: none"> • Substitution - Practice enacted at the neighbourhood level – in a novel situation 	<ul style="list-style-type: none"> • Make explicit meanings of sustainable living • Mechanism for circulating meanings and competences

6.4 Dwelling the house

In this section a number of different practices are discussed under the domain of dwelling the house (see Figure 6.5). This term is used to capture the everyday practices that make up the daily rhythm of domestic life. Whilst there are many, many practices that fall within the umbrella of dwelling the house, this section will focus on those whose performance in the Bundagen Community differed from the norm, and that came up in discussions about environmental sustainability. These include practices of lighting, household entertainment, provisioning the home, household cleanliness, washing (laundry) and personal hygiene. Food provisioning, which could also be considered within the domain of dwelling the house, is discussed in a separate section looking at food related practices. The Bundagen practitioners saw energy provision as an integral part of the household practices, particularly in relation to their perceptions of sustainability; so, energy provisioning is discussed as a 'dwelling the house' practice. Many of the Bundagen community members interviewed were extremely aware of the energy consumption implications of their everyday actions, and changed elements of their practice in response. This contrasts with the experience of Schröder (2013) (who also looked at the domain of dwelling the house in his doctoral research), who found that interviewees tended not to refer to energy as the main concern.

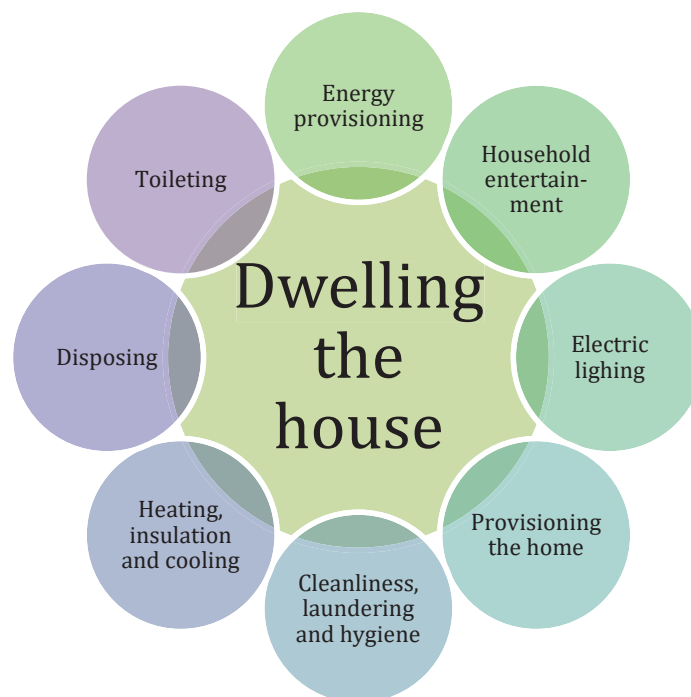


Figure 6-5: The practices of dwelling the house discussed within this section

6.4.1 Energy Provisioning

Bundagen Community is completely independent of the electricity and mains gas grids, and has been since the community was founded in the early 1980s. This independent, off-grid nature of the community was described as being 'part of the grounding belief' (Janelle, 36 years) of Bundagen.

Each household was therefore constantly engaged in ensuring energy was provided to their household.

The community members interviewed were regularly performing a range of practices related to ensuring their household was provided with the energy to function, in a way that would have been unusual in mainstream society. Residents regularly check solar output and battery storage levels, checking the weather before using certain appliances, and monitoring energy usage within the house. Electricity for all households was supplied almost solely by household solar panels connected to battery banks (some people had petrol or diesel generators to run high demand power tools). Figure 6-6 shows an example solar array. Hot water was generally supplied by solar hot water systems. LPG gas bottles were used by many households, for cooking, sometimes for heating, and sometimes to power gas fridges. Wood, collected on the property, was used for heating and for cooking by some households.



Figure 6-6: Trevor's solar panel array, constructed by addition over a number of years

Energy independence was an important aspect of sustainability for the community members, and was generally one of the first things mentioned during discussions about sustainability. The meanings and aspirations that support the independent energy provisioning practices of the community are shared by other practices such as the use of off-grid composting toilets on the community site; a desire to be independent of the mainstream, as self-sufficient as possible, and to take personal responsibility for your own basic 'services like power and water and taking my rubbish to the tip' (Jenny, 33 years). Many community members described similar feelings:

When I was living in say a small country city working there was always a bit of stress around the power bill and so on and here there probably still is but somehow or other

inside, deep inside there is a satisfaction that you're not dependent on an outside source (Bob, 33 years).

What I like about Bundagen is we've been doing it for 30 years and because we're in charge of our water, our power, our toilets and everything like that, its self-limiting. If you wanna spend more money you can have a large system and have everything that anybody's got outside, however you can have a small system and it works perfectly good (Trevor, 33 years).

Self-limiting was a word that Trevor used frequently, in a similar way to the idea of sufficiency, which was a meaning that a number of community members discussed. They had become comfortable with the restrictions of a limited solar system, and were able to make changes to their lifestyles to accommodate those limits. Bob talks about enjoying saving money by tracking down second hand batteries and squeezing that last bit of life out of them, and enjoying the simplicity that comes from having such a small amount of power to work with in his home:

the last quite many, many months, probably nearly a year, my batteries have been in such a state that I've had enough for 12 volt lights and when the sun's out I can run the 12 volt water pump and have a shower, that's been the case for a year and I've quite enjoyed it (Bob, 33 years).

This wasn't an unusual sentiment, Jenny also mentioned deciding against upgrading her solar system because she didn't think she needed it:

Sometimes I think oh, [I've] got enough money to go and buy some more panels or upgrade the system but it's actually working quite nicely cause it's just me there and just one or two visitors, it's all manageable. And I quite like that balance, I think I don't need to go out and buy more, do more (Jenny, 33 years).

Fundamentally, the materials needed to supply solar electricity to each household consists of an array of solar photovoltaic (solar PV) panels, batteries to provide power storage, and an inverter to convert battery or solar power from DC to AC power. Most of these systems were originally installed in the 1980s as the households were being built, at a time when photovoltaic and battery technology was more expensive than it is now. The system sizes on Bundagen are therefore generally much smaller than the average Australian system.

The size of the solar systems amongst the respondents to the ecological footprint survey ranged from 320 watts (W) to 1275 watts (0.32 kW – 1.28 kW), with an average 685 W, with battery size ranging from 190 amp-hours to 2560 amp-hours (average of 825 amp-hours). This compares to the average system size in Australia of ~3.5 kW, and the average size of a newly installed system in 2016 of ~5.6 kW (Clean Energy Regulator 2017).

Some residents who installed their systems over 30 years ago still had their original panels in place. Others had increased the size of the system over the years, either through gradual addition of new panels and components or replacement of old panels. The price of solar modules has fallen dramatically since Bundagen was founded (in the order of a 25-fold decrease in price per watt since 1980 (IEA 2014)) which has made it much easier for households to increase the size of their systems. Ideas of sufficiency obviously differ amongst the residents interviewed, and there is likely a wider variation across the entire community. The system sizes mentioned above take into account any upgrades, so even with increases household systems at Bundagen remain significantly smaller than average Australian systems (approximately 25% of the size of the average Australian system). For many years, the solar system sizes were extremely limited, a point that is illustrated by one of the residents, Jane, comparison between her new system (780 W) and the original one for her house:

I've got a new system on this house which has got four panels and, four batteries... And then that's [separate building containing her son's room] got like two ancient, ancient 30-year-old type panels which don't generate very much at all, which is just charging the car battery.... Yeah so basically that's just for lights and stuff... I couldn't even begin to estimate how minimal the power that he [Jane's son] is generating over there (Jane, 12 years).

The use of solar panels at Bundagen provides an interesting insight into the dynamics of practices. When Bundagen was formed, solar panels were much more expensive than they are today, so the community members could only afford small systems. From that point forward the limited supply of electricity from the small solar PV systems was a material constraint in any practice requiring electricity consumption. They had made the decision to go off-grid (meaning), and only get a solar PV system that they could afford (economic independence – meaning) which acted as a motivation to work within those constraints. Over time they adjusted to those constraints, acquiring the practical know-how to modify behaviours in response to available electricity (competences). As prices on solar PV equipment decreased, the energy conservation practices were established strongly enough that some people didn't feel the need to increase the size of their system. On the other hand, newer residents may still have had stronger practice memories of living without electricity constraints that increased the motivation to expand their electricity generation capacity.

Batteries were a key material component of the solar system. They acted as the limit to how much electrical power can be stored for night-time usage, or for periods of cloudy days with poor solar power generation. This physical constraint required management by the householders, which impacted on energy provisioning practices, and on the way other practices were performed to work within the constraints.

From the interviews, it was clear that there were varying levels of competence amongst the members of the Bundagen community with regards to carrying out energy provisioning practices. This was evident from stories regarding operating and maintaining the solar PV systems, particularly regarding the use of appliances to utilise the solar peaks and battery storage most efficiently, as Bill described:

it's really a more hands on, responsible approach. And some people are not capable of that, and I have some friends here who'll tell me, when my system is peaking, floating, oh they are out of power because they have, for four days of cloudy weather, they've just used everything... run the TV...their battery bank is down whereas my battery bank has never gone lower than 80% full (Bill, 36 years).

This quote from Bill highlights the different levels of competence amongst energy provisioning practitioners at Bundagen, and that competence in managing consumption is an important skill in ensuring effective ongoing provision. The role of feedback is interesting to consider also. Mismanaging energy usage during a cloudy period might mean not being able to turn lights on in the evening, and it is only a few days before you are affected by the lack of power arising from poor management. In addition, being able to compare energy storage levels with a neighbour provides comparative feedback, in the sense of a practitioner knowing that a neighbour may have survived a period of low solar output without running out of power whilst they did not, and therefore being aware that they could improve their competence in managing power consumption.

Unsurprisingly then, most interviewees did express a genuine interest in knowing how their systems were performing:

It's a real fascination every single day I come home and press that little yellow button and go, how many amp-hours did I get today... (Phil, 10 years).

Jenny deliberately put the dials and meters for her solar system in her lounge room, rather than outside on the verandah, so that she can look at them:

I want to look at it... I want to know how many amps are coming in and the amps are going out, and what the voltage is in my batteries... (Jenny, 33 years)

There was a general level of familiarity and competence amongst the Bundagen community about the production of energy at a household level that would be unusual in mainstream communities. The comfort and frequency with which people discussed voltages, amp-hours and other electricity-related terms with regards to solar output or appliance consumption is one illustrative example of this. This competence was evident in discussions about many other householding practices, and will be discussed further in the coming pages.

A significant number of residents talked about using second-hand materials even for energy provisioning:

I use second-hand batteries even, I get them off building site in Sydney that have had lifts and this sort of thing. So that I don't even buy new solar gear. My solar hot water system, I found it on the street in Sydney, and it cost me nothing (Allan, 34 years).

Other materials required for energy provisioning practices at Bundagen included household LPG gas bottles for powering stoves, and sometimes gas heaters and fridges. These need to be replaced by the householder once empty, so require some level of monitoring to avoid running out of gas. Most households used wood fires for heating during the colder winter months, with the wood used for fuel collected from the Bundagen property, from fallen trees and branches.

6.4.2 Energy consumption

The 'self-limited' energy supply of the Bundagen households meant that new elements were introduced into many of the everyday practices. Energy conservation becomes a very real aspiration throughout the day (meaning). Knowledge of the current and predicted weather, and the impact this will have on energy provision, is a competence that can greatly improve the ability to perform a particular practice. For instance, Janelle, and particularly Bill, constantly monitor the weather and adjust appliance usage on an ongoing basis:

Bill looks at the weather every day ha ha... well probably 3 times a day so we know what's going to happen and Bill tells me not to use this, or I know automatically today I don't use it. And also we turn off the fridge if we think we are going to have a [period of cloudy weather]... Bill turns off the fridge, Bill's the fridge Nazi he he he (Janelle, 36 years).

Phil noticed the growing awareness of power consumption in his teenage daughter when she came to stay with him at Bundagen (from her usual home in a large city):

...having every light on, the computer, the modem everything on all the time never bothered her or even entered her consciousness but here she's very quickly learning...the actual usage of those things that are really important to her, the computer, the modem, lights, because she wants to use them herself and she knows she can't use them if there's no power to use them so it's been really amazing watching somebody learning yeah (Phil, 10 years).

His daughter was incorporating both new meanings (the importance of conserving power) and new competences (understanding of power consumption of appliances) into her performance of everyday household practices, particularly related to providing entertainment.

There is an interesting comparison between this response and those seen in studies of household responses to the installation of smart energy monitors in research by Hargreaves et al (2010; 2013).

They found the monitors did increase householder knowledge, but that their understanding of 'normal' level of energy usage (which householders learnt from the monitors) quickly became unquestioned; potentially it was reinforced and became 'locked-in' and more difficult to change further (Hargreaves, Nye & Burgess 2010, 2013).

Like the participants in smart energy monitor trials, Bundagen householders had access to real-time information about their energy usage. However, circumstances at Bundagen differed in that the consequences of misusing their energy supply were greater. The capacities of their PV and battery systems meant there was a finite amount of energy available to them, if they exceeded this usage, they would not be able to operate electronic household appliances. In response to the limits imposed by their systems, most residents had developed competences to manage energy usage and battery levels within the household to fit within the constraints. They had a high level of knowledge and confidence about the amount of energy they were consuming, and exhibited some pride in this knowledge. Like the residents in the research by Hargreaves et al (2010, 2013) the Bundagen members adapted their energy usage to a 'norm', however it was a very low consumption norm enforced by their PV systems, which were self-imposed by their choices to pursue energy independence. Importantly, the Bundagen residents had meanings and motivations that contributed to their acceptance of the constraints of the alternative energy production practices.

6.4.3 *Electric lighting*

For some interviewees, lighting was a topic of particular importance. Lighting of some kind is a fairly basic requirement in a household (none of the interviewees discussed were not using electric lights). The material change in energy consumption brought about by the introduction of low watt LED lights was described by Trevor as one of:

the only things that have changed my life... they've brought back a particularly dead battery and gave me another year out of it which was really fantastic (Trevor, 33 years).

Those interviewees that discussed electric lighting talked about it in terms of energy consumption, particularly – like Trevor – the impact of LED lighting. LED lights were the first thing Chris (36 years) mentioned when discussing his own power consumption, which he described as 'pretty low'. Greg (36 years) talked about 'chasing' power reductions, and how by changing all the eight lights in his house from 20 W globes to 3 W LEDs he was able to reduce his power draw from 160 W down to 24 W. This spare power draw was then used by a second TV purchased for the household, so the driving motivation wasn't necessarily to conserve energy, rather it was to fit within the self-limiting constraints of the small solar system attached to the house.

The discussions about LED lighting revealed a certain level of knowledge about the energy and power consumption of lighting products, as was mentioned previously in the energy provisioning section. Jenny (33 years) commented that after a run of sunny days, when she notices the regulator indicates that her battery is full, she takes joy from leaving her LED outside light on so that it feels more welcoming when she gets home. Her understanding of the impact of one LED light on her system allows her to take pleasure in a small amount of 'wastefulness', knowing that in this case it doesn't matter.

The interviewees all displayed a level of competence in using the purchase of light globes as part of managing the overall energy consumption of the household. This management is different from that required in a more mainstream, grid connected household, as it needs to fit within the constraints imposed by the off-grid solar energy provisioning practice that dominates at Bundagen. The constraints of a small system are not just related to the material photovoltaic panels, but the meanings prevalent in the community which value sufficiency and provide encouragement for residents to 'make-do' with the existing system rather than increase its size.

6.4.4 Provisioning the home (acquiring)

The meanings and competences held by residents of Bundagen frequently impacted on the acquisition of household goods. This played a role both in what Waitt et al (2012) described as everyday purchasing decisions and big ticket purchasing decisions. Interviewees talked about the importance of energy efficiency when buying appliances, sourcing second-hand and recycled materials, and trying to avoid consumerist society in general; to live a simpler life.

This was most notable regarding energy consuming devices. Greg (who is particularly knowledgeable regarding electrical matters) talked of his chase for power savings in the previous section on lighting practices. He talked about the significance of power consumption amongst household appliances, and his desire to keep finding appliances that used less power (in his case particularly LED lights and newer TVs) to maximise his existing solar system. For Trevor, it was LED lights and laptops with 'ridiculously low' power usage that has helped everyone at Bundagen and changed his life.

Bill discussed how the source of energy was also an influence on his purchasing decisions. He was conscious of the fact that his solar system produced more power than he was using (he found that for 80% of the year it was floating everyday, meaning it was producing more energy than he needed). He therefore started replacing gas-powered appliances such as his fridge and stove-top kettle with electric appliances:

So I am really in that way reducing my ecological footprint because I'm not demanding any more energy from anywhere outside, but I am reducing my energy from outside because I am using less gas (Bill, 36 years).

Whilst reducing energy consumption and making the most of solar resources were important, the idea of making full use of existing resources was also commonly discussed. For example, Greg talked about waiting for his old, large, high usage (145 W) TV to breakdown 'so I can chuck it out so I can get a 60 W TV'. So, whilst low power consumption was his goal, he did not think throwing out his existing TV before it broke down was an appropriate solution. Bill and Janelle found their solar hot water system second hand in Sydney in 1992, and were very proud to have been using that system for the last 20-plus years.

Getting goods second hand, and reusing where possible, were important ideals for most of the community members. All the respondents to the ecological footprint survey had used some amount of recycled materials when building their house, and for the majority it was a significant percentage. It was similar when discussing clothing and household items. Jane had furnished her house with mostly second-hand goods. Allan bought second hand clothes:

I buy second hand clothes, I go op shopping³⁵ and I love second hand clothes (Allan, 34 years).

Mick and Teresa (13 years) also bought second hand clothes from op shops for themselves and their sons. They had recently found that they were needing to adapt somewhat for their teenage daughter and purchase new (and expensive) clothes. This is an interesting example of the different meanings attached to wearing and buying clothing influencing purchasing practices. Mick and Teresa have also used mostly second hand furniture in their house, and could trace the flow of goods around the community:

...we have got Urja's desk. And our chairs went to Jane. We have got Jala's piano (Teresa, 13 years).

Teresa's comments indicate that sharing of goods was common within the community. Jane also found that sharing was very common, saying that 'we are just always giving things away and passing them on' (Jane, 12 years). However, different people seemed to have different opinions on sharing within the community. For some it happened all the time, and others not so frequently. There was no organised system for distributing or reusing second-hand goods within Bundagen (as there is with the open-closet and RUG room at Murundaka, to be discussed in the following chapter), so it's likely that the extent of sharing depended on individuals' networks within the community. Jane talked about frequent food sharing with other members of her village, whereas for Allan:

³⁵ Shopping at charity or second hand stores, commonly known as 'op shops' or opportunity shops in Australia

I may not share necessarily with people closest to me but there will be people the community that I will share with... that I'm socially more in tune with (Allan, 34 years).

The other meaning that influenced people's provisioning practices was the idea of sufficiency, partly influenced by an anti-consumerist sentiment, and perhaps captured in the concept of voluntary simplicity. As Rejane explained:

If you choose voluntary simplicity you can live with not too much. If you're happy not to go out in restaurants and not to buy new clothes all the time and not to get your hair done at the hairdresser you can live very simply. So that's what people often choose by living here (Rejane, 26 years).

Allan was a strong believer in living a simple life, and found trying to avoid a consumerist lifestyle gave him a lot of freedom.

You know I like to use whatever is at my disposal, you know, I don't necessarily need to have a new one of those things. I don't have, a great need for, you know, that aspirational consumerism. For me I guess I've, by not buying into that it frees me in certain ways not to, you know, I have a computer it's a necessary evil, I love the thing. But, yeah, I'm not out there buying the latest one, mine's 4 or 5 years old and it does everything I need to do (Allan, 34 years).

This attitude was summarised by Bob, who just said '*mind you, it's good to avoid consumerist society*' (Bob, 33 years).

Whilst these meanings were common amongst many of the interviewees, and are embodied to a large extent in the way Bundagen has been constructed, there are still a diversity of meanings within the community. These are reflected in different provisioning practices. Jane, for instance, describes herself as very 'middle-path':

So there would be a lot of people on Bundagen who are much more kind of, you know they would be thinking about everything that they buy, or where everything comes from. So I'm not to that degree... (Jane, 12 years).

However, as mentioned earlier, Jane has mostly furnished her house with second hand goods, and comparisons with the types of mainstream practices described in Section 4.3.1 indicates that the so described 'middle-path' for a Bundagen resident takes a different route to that of a more mainstream 'middle-path'.

One thing that has not been mentioned yet is the economic aspect of many of these provisioning practices. As discussed earlier, economic independence, and the idea of being debt free were founding principles of the community. For some, this was primarily about accessing cheap housing, but for others minimising living expenses was an important component in living an environmentally responsible, low footprint lifestyle.

In a similar way, provisioning with second hand goods and sharing between community members were ways of reducing living costs. This reduction of work requirements freed up time to dedicate to sufficiency strategies to improve quality of life, without increasing consumption levels. Jane discussed her experience:

basically I was looking for situations in which I could live more cheaply, like work more cheaply and live more cheaply, have more times for things that make me happy. Which are things like making and growing and things like that. That kind of closer to the earth lifestyle (Jane, 12 years).

This is an example of meanings of voluntary simplicity combining with some practical competences and the physical material of the Bundagen community creating situations where lower impact lifestyles were possible.

6.4.5 Household cleanliness, laundering and hygiene

Residents of Bundagen frequently discussed washing (laundering) and cleaning practices with reference to the use of resources involved. For instance, Jane discussed her use of the vacuum cleaner, and how that was governed by the energy constraints of her solar system, and available sunshine:

And it says a 1000 W inverter, but it does peak at 1600 [W]. What I've got [is] a 1200 [W] vacuum cleaner or something like that and on a good sunny day in the middle of the day I can use it (Jane, 12 years).

Jane is using a regular vacuum cleaner (material), and still considers vacuuming to be a good and useful means of achieving cleanliness in her house (meanings). Her vacuuming practice differs from a more mainstream conception of the practice-entity in that she has acquired new competences regarding the power consumption of her household appliances and the power output of her solar system under different weather conditions. This would represent an example of what Spurling et al (2013) refer to as a re-crafting of an existing practice by changing one of the key elements.

Jenny, by comparison has substituted the practice of vacuuming with some other means of keeping her house clean (most likely sweeping):

I told my students the other day I didn't have a vacuum cleaner, they couldn't believe it and they nearly fell off their chairs, how could anyone live without a vacuum cleaner. I thought no I don't actually need it and then I felt all weird and went and looked at vacuum cleaners in Harvey Norman's or something I thought no I don't need a vacuum cleaner, it's ridiculous (Jenny, 33 years).

It's unclear whether this decision was related to a desire for sufficiency, or reducing energy consumption, or something else entirely. It is interesting to see both how shocking Jenny's students

found the idea of not having a vacuum cleaner, and also the way that reaction caused Jenny to question her own decision for a period of time. It represents an example of the differing meanings of what cleanliness is, with the students strongly linking the idea of a clean house with a vacuumed house, whilst for Jenny, cleanliness could be achieved in other ways.

This provides an insight into how certain versions of practices become normalised over time. Following this example further, older generations can still remember a time when their parents didn't own a vacuum cleaner, so they still carry what Maller & Strengers (2013) refer to as practice memories, of ways of cleaning the house that don't involve mechanical cleaning. However, vacuum cleaners are now almost ubiquitous, and for younger generations the practice of cleaning the house is nearly always associated with the use of a vacuum cleaner. Not only is a new material required, but new meanings of what it means to have a clean house develop, which have implications for the energy consumption of the household. (See Shove's (2003) study of the evolution of personal washing practices over the last century for a deep exploration of a similar phenomenon).

Trevor was a strong exponent of a voluntarily simple lifestyle. As well as his tiny home, he had kept his simple outdoor bucket shower. He enjoyed the simplicity, the lack of extra cleaning involved, and the fact that the bucket 'scripts' a certain length of shower and associated amount of water usage. As Trevor explained:

even old technologies like my shower, I've deliberately kept it as a bucket shower... I've got a great view of the forest and if it pours with rain I just make the water a bit hotter... I like that sort of self-limiting technology and people can't go in that are visitors and turn the shower on and just have long showers cause it's a bucket shower, it's limiting, self-limiting all the time (Trevor, 33 years).

It is interesting how he has turned aspects of showering outdoors, which would normally be considered less desirable than an indoor bathroom, into virtues by focusing on the great view of the forest provided by the outdoor location.

6.4.6 Heating and cooling the home

Heating and cooling practices were infrequently discussed by Bundagen residents during interviews. This could be considered surprising, as indoor climate control is generally considered to be a major contributor to household energy consumption. For instance, Strengers et al (2015) focused on heating and cooling practices when designing a lifestyle audit looking at practices performed in the home for an electricity company.

There are two reasons that are likely to be the most significant reasons for the lack of focus given to heating and cooling practices: climate, and equipment used for controlling climate. Firstly, the climatic region where Bundagen is located is extremely comfortable for much of the year. One of

the residents mentioned a study or modelling exercise that found that an unclothed person would be within the comfortable temperature range for human habitation for more days out of the year in the Coffs Harbour region than anywhere else in Australia. Bundagen is located right on the coast, and therefore experiences the moderating impact of the ocean throughout the year:

... I think we're lucky. The luxury here is it's a terrific climate. You get two months of cold weather and that's about it. And you know you're on the coast so you actually get the breeze (Allan, 34 years).

Secondly, the equipment that is commonly used for cooling and heating in the community doesn't use much electrical energy. Bundagen households generally used electric fans for cooling during the warmer months, and these are typically not large energy consumers. The energy provisioning history of the community, with very small solar systems for much of the lifetime of the community (when solar was much more expensive) would have made air conditioning a prohibitively expensive option for cooling. It would still be difficult to accommodate with the small sized solar systems of most households. Even if it were more practical and affordable now, households have long been carriers of cooling practices that don't require air conditioning, and so don't have a need to change.

Most households did use some form of heating for the winter months. For almost all, heating was in the form of wood burning heaters or fireplaces. This does not require any electricity from the solar PV systems, and relies instead upon a resource that is plentiful on the land occupied by the community. Wood burning is commonly considered to be carbon-neutral (and therefore have a smaller ecological footprint than heating with fossil fuels). Whilst this assumption can be problematic (Johnson 2009), as long as the wood is being sustainably harvested and vegetation stocks are not being depleted within the community then it is a reasonable assumption. Allan was one of the only residents to discuss the source of his wood, and he found that his wood heating needs were met simply by collecting fallen timber, which would indicate a sustainable level of usage.

6.4.7 Disposing

This section focuses on the disposal of household waste. The way that household waste was disposed of at Bundagen was not particularly unusual for rural households. The community was still part of the wider waste transfer and disposal system of the local council area. They were not part of the council bin collection service, so the residents had to collect and store their own rubbish and recycling and transfer it to the council waste disposal facilities themselves. This results in different practices from urban regions, but it is not unusual in rural areas of Australia. The people interviewed at Bundagen were all conscious of the waste that they produced and how that was disposed of. This is well illustrated in the section on toileting practices and the use of compost toilets at Bundagen. It is also apparent when discussing disposal of general household waste and food waste.

There are a variety of different meanings that form part of the waste disposal practices at Bundagen. These include: The reuse of resources (composting and sharing), avoidance of waste and excess packaging, and reducing cost and inconvenience. The general philosophy behind disposal practices was fairly well summed up by Allan, who said:

I obviously compost what I can compost and recycle the rest as best I can, so I don't generate that much rubbish (Allan, 34 years).

Composting of food waste was clearly an important practice within Bundagen. Phil described his family as 'compost Nazis', meaning rigorous in their adherence to composting principles, and Jenny talked about getting very agitated when visitors would put potential compost into the rubbish:

You have to tell visitors cause you see them and like they're scraping the food scraps into the rubbish bag and I'm having a fit... I'm having a fit, get that out of there... (Jenny, 33 years).

One aspect of this focus on compost appears to come from the significance of responsibility for yourself and to the land at Bundagen. Composting was seen as a means of creating a valuable material (compost for the gardens) from waste material, that could be returned to the earth, even for the non-gardeners:

I mean some people they're just not gardeners but I can't imagine people taking their food scraps out to a rubbish bin (Chris, 36 years).

The links between composting and food provisioning practices will be discussed more in the next section. There are also practical considerations around reducing waste that would go to landfill because householders need to take responsibility for their own waste and take it to the council tip (landfill) or recycling centre. Firstly, this was a burden, and reducing waste created reduced the number of trips the household needed to make to the landfill. The local council has also established price incentives that act as external motivation to encourage people to reduce waste to landfill and increase recycling. Bundagen residents were aware of the different costs:

The thing is that the closest tip, Coffs Harbour, can only take recycling, like paper, cans and bottles. Right, and you can't take any rubbish in because it costs \$11. If you've got one garbage bag its \$11... so they encourage you to recycle the paper, glass and tin because it's free... (Greg, 36 years).

Whilst this is an encouragement for community members to recycle more, it also leads to other disposal practices:

you recognise a Bundagen person cause they've got a small plastic bag of non-recyclable rubbish every time they go into town to throw in a local bin... (Trevor, 33 years).

In general, residents talked about trying to minimise both the purchase of new things and the creation of waste:

I don't buy a lot of excess crap and packaging ... [I] try to minimise packaging and recycle stuff (Chris, 36 years).

I've done the ridiculous thing where I've gone with 10 bloody tahini bottles down to the beach, go the sand, scrubbed them out brought them back (Trevor, 33 years).

The idea of feedback about waste production seems to be an important factor at Bundagen. Because waste has to be collected by the residents at their homes, and then taken to the rubbish tip, residents are quite conscious of the waste they create. The burden of accumulating and storing the waste and then disposing of it at a tip creates an incentive to reduce waste.

6.4.8 Toileting

The practice of toileting is one that many residents at Bundagen discussed as important to the sustainability and self-sufficiency of the community. In many ways it is distinct from what would be considered the normal practice of mainstream society.

All households in the community used composting toilets (CT). CTs are the most common type of waterless toilet, and are regarded as a means of processing human excreta that has a low environmental impact (Crennan & Milne 2013). They are described as 'a genuine, minimum energy, on-site alternative to centralised reticulation systems' that, when appropriately designed 'conserve precious water resources and keep effluent and pollutants out of waterways and the general environment' (Crennan & Milne 2013, p.434).



Figure 6-7: Mudbrick composting toilet 'block', with toilets. Note the raised level of the building to allow the composting chambers, which can be accessed from the hatches on the side.

The decision to only use CTs at Bundagen was made during the formation of the community. Their use was consistent with a number of the socially shared meanings and aspirations of the community, which could be summarised as: independence and self-sufficiency, conserving resources and valuing what would normally be considered waste as a resource.

From the start the community members shared aspirations to be as self-sufficient and independent as possible. Using CTs meant the community did not need to connect to the local sewerage network, which was seen as a desirable goal. Everyone became responsible for their own waste, which was something many members felt proud of:

I like the idea of being responsible for my own basic services... and looking after my own shit (Jenny, 33 years).

The members built many of the toilets within the community themselves, such as the mudbrick toilet shown in Figure 6-7 . This is another expression of the self-sufficiency aspiration of the community.

The community is also responsible for collecting all their own water using rainwater tanks. Therefore conserving water, and minimising its consumption, was a meaning shared by the majority of the community. CTs don't require any water to function, and were therefore more desirable than individual septic systems, which is an alternative technology that could have been used at a site with no sewerage connection.

The idea of valuing waste, or reusing things that may otherwise be considered waste is also one which Bundagen members discussed frequently, and in the case of their CTs, passionately. The compost that is produced by the toilet is highly valued for the nutrients it provides the soils and gardens of the community. When one of the newer residents, Sandy, moved from one village to another within Bundagen, one of the things he took with him to his new home was the last batch of compost from the toilet that he shared with his previous neighbour:

I dug out the last lot of compost about 6 months ago out of his [previous neighbours] toilet and put it round the fruit trees and it was beautiful. (Sandy, ~5 years).

This valuing of human waste is far removed from the flush and forget way that excreta is normally treated in mainstream society. At Bundagen a new meaning exists, so that which is often shunned is instead celebrated, and fought over. Jenny found it:

Pretty exciting emptying the toilet, we fight, Andy [her neighbour] and I fight over the contents of our toilet and... who deserves more wheelbarrows of it (Jenny, 33 years).

A CT requires a different, but still recognisable, set of materials compared to conventional toilet systems. The general concept of the CT is that the users still sit on toilet seats, but instead of the excreta being flushed away through a pipe system, it drops into a container where the composting occurs. It will generally function best when kept warm, so a sunny, north facing position is ideal. Every village at Bundagen uses CTs, with some sharing a few toilets amongst the households in the village, others having individual toilets for each household, whilst some are a mix of the two. There are a number of different designs for CTs, and there are many different materialisations of CTs within the Bundagen Community. Some were quite impressive structures, such as Figure 6-7, and others resembled the outhouse toilets that were once common in Australian backyards. For a long time, some community members used pit toilets (i.e. a hole in the ground). These don't have the design features that allow for the proper composting of excreta, although they still work on the principle of returning excreta to the earth. As part of an ongoing process of bringing all dwellings in Bundagen up to legal standard, all the CTs were assessed, with 15 requiring improvements to bring them up to standard.

An interesting aspect of the physical design of the CTs at Bundagen is that most households do not have individual toilets, instead they share with a number of the surrounding households. The toilet then becomes a potential site of informal social interaction amongst the sharing households.

The key material input for the practice of toileting is provided by the residents. The carbon component is generally sourced from within the community (from sawdust, wood chips or leaves). The main output is compost, which is used as fertiliser for the gardens (generally for the fruit trees).

The practice of gardening, of producing food, is well established at Bundagen, with many practitioners.

The sharing of toilets also means that the competences associated with compostable toileting can be shared to a certain extent. The maintenance of a CT requires more knowledge than a regular flush toilet, and as most of the toilets at Bundagen were built by community members, design and construction knowledge was also required.

A number of unique skills and competences are required to maintain the CT. Sawdust is added after use to create the proper carbon-nitrogen mix, aerate the pile and prevent compacting (Crennan & Milne 2013). The CT needs to be well drained. The compost needs to remain 'fallow' for a period of time (generally between 6 months to 3 years) so that it can breakdown without being contaminated by fresh excreta. The length of time for this to occur depends on a number of variables, such as the size of the system, frequency of usage and climatic conditions, so this know-how often only comes with experience. The CT shown in Figure 6-7 is an example of a well-designed toilet. Bill (36 years) was particularly proud of it, and following our interview took me on a tour of his CT. He has taken on the bulk of the responsibility for maintaining the toilet and the compost it produces. He noted the different level of competence between himself and the neighbour he shared the toilet with, commenting:

if I passed away... we share a composting toilet with our neighbour and I think, well, she would be on a steep learning curve... very steep (Bill, 36 years).

This example shows that not everyone within the community shares the same level of competence. Throwing sawdust down the toilet after use is a simple skill that most people are likely to follow, but as the toilets are shared amongst households, the more expert competences related to drainage, fallow time, diagnosing and fixing issues based on the smell of the toilet, only need to be held by one user of the toilet.

In the quote from Bill above, there is the strong implication that the neighbour hasn't taken sufficient interest in the maintenance of the CT. However, competence in all aspects of proper compost toileting practices do not need to be uniformly shared by all residents, there only needs to be one 'expert' composter for each toilet. Sandy found this after moving to his new home:

I've got to get my head around the composting toilet, because over at [previous village] we had a shared toilet, and it was my neighbour... who kind of looked after the whole thing. So at some stage I've got to really just stop shitting in it and work out how to maintain it as well (Sandy, ~5 years).

When people do decide, or are forced, to become carriers in the practice, not just a material element in the practice, they are able to share competence with others in the community. For Sandy, there

were many people able to share knowledge by providing advice on how to maintain a CT once he needed to do it for himself:

I mean yeah that's it there's any number of people who'd say look, do this, this and this. (Sandy, ~5 years).

The comments from Bill and Sandy above indicate that elements of a practice, in this case competence, do not need to be evenly distributed for the practice to endure. If key competences are not widely distributed, this may increase the vulnerability of the practice if the 'expert' knowledge is lost (if Bill passed away, for example).

However, Sandy's experience highlights how meanings are also important, and impact on the vulnerability of a practice. When Sandy moved to a new house, and was forced to maintain a CT for himself, a lot of competence regarding the correct maintenance was 'lost' in the performance of compost toileting practice. As Sandy valued the compost toileting practice (and was sufficiently passionate about the meanings of independence and self-sufficiency, conserving resources and valuing what would normally be considered waste as a resource that are associated with CTs), he was confident that he could obtain the knowledge and competence required to be able to properly maintain his toilet.

Bill's neighbour may not share similar meanings and passion for CTs, which would create an impediment for accessing the competence elements required to correctly maintain the CT. Equally, they may hold similar meanings, but as they live next door to an expert in compost toilet maintenance, they have never needed those particular elements of competence. The example of Bill and his neighbour provides an illustration of what may happen if such toilets were introduced to more mainstream setting. CT may be acceptable in an apartment style context if there was a building management that could assume responsibility for the maintenance competence, in an unobtrusive manner.

6.4.9 Summary

This section has discussed eight practices that many, if not all, households were performing that Bundagen community members felt reflected aspects of living a more sustainable lifestyle. Of all these practices, two stood out as being both unusual practice innovations in a household context, and with significance for environmentally sustainable consumption: independent solar energy provisioning and compost toileting.

Off-grid solar electricity production / independent power production:

The off-grid solar power systems used by all the householders introduces a new practice into the daily lives of the householders, that of managing their energy system or energy production and

consumption. As most households in Australia are connected to the electricity network, electricity is effectively an invisible service provided to their home with knowledge of consumption often only occurring based on the cost of monthly or quarterly bills. Electricity is an element used in other practices, but not a practice in itself. For the Bundagen households however, electricity production is a practice that could be described as somewhat akin to gardening. There are occasional maintenance activities such as upgrading the batteries, adding solar panels or cleaning the panels (equivalent to turning the garden bed, planting seeds, maybe weeding). Skilled householders regularly, almost sub-consciously monitor the weather to understand what their electricity 'harvest' will be like, sometimes checking the inverters and battery monitors to get a better understanding. They also modify their behaviour to adjust to different energy production conditions. Whilst electricity is mostly invisible to many in mainstream communities, the Bundagen community members are much more aware and knowledgeable about it. The recent uptake of rooftop solar in Australia³⁶ means that material elements of this practice – solar panels and inverters – are becoming widespread amongst Australian households, although they are predominantly grid connected systems. This practice is therefore starting to spread into the mainstream, although the lack of grid connection amongst the Bundagen households created a number of differences in this practice.

Compost toileting (with shared toilets):

Whilst still a form of toileting, the use of compost toilets leads to the development of a largely separate practice, with distinctive material elements, socially shared meanings and competences that are required to sustain the ongoing performance. This practice is an example of one that is still recognisable as 'going to the toilet', but involves a recrafting of all elements to such an extent that it could almost be described as a new practice. This practice has significance for sustainable consumption for a number of reasons. No connection to the sewer network was required at Bundagen, which is a significant avoidance of material and construction energy for the laying of pipes to the land. It also represents an ongoing avoidance of the energy consumption required to power the wastewater treatment process for sewerage. The composting process requires no input of electrical energy, although some systems may have very small fans to increase airflow. In addition, the composting process produces a useful and valued raw material that is used by the households for their gardens, productively reusing resources. Also significant is the stability of the practice, and the way it is valued within the community, rather than 'tolerated'.

Table 6-3 summarises all the house-dwelling practices discussed in this section, describing the type of intervention occurring within the practice, and the sustainability significance of that practice.

³⁶ Reported installed capacity of solar PV was 516 kW in 2001, in ~35 MW at the end of 2008, and ~5.8 GW at the end of 2016 (Australian Photovoltaic Institute 2017).

Table 6-3: Key practices and elements of dwelling the house at Bundagen Community Cooperative

Domain – Dwelling the house					
Practices	Elements			Type of intervention into 'mainstream' practice (Spurling & McMeekin 2015)	Sustainability impact of practice (Schanes, Giljum & Hertwich 2016; Seyfang 2009)
	Materials	Competences	Meanings		
Energy provisioning – Off-grid solar	<ul style="list-style-type: none"> • Solar PV (small) • Batteries • Inverters • Amp and voltage meters 	<ul style="list-style-type: none"> • Managing consumption linked to battery charge • Linking weather patterns to electricity supply • Basic understanding of electricity 	<ul style="list-style-type: none"> • Energy independence • Self-sufficiency • Responsibility for own needs • Sufficiency – making do 	<ul style="list-style-type: none"> • Energy production becoming a practice of the household • Energy management also becoming a household practice 	<ul style="list-style-type: none"> • Establishing an alternative system of self-provisioning of energy • Reducing ecological footprint • Direct improvement through using products that are more sustainable in use • Average Australian can save 2.2 tCO₂e per year by purchasing green power (Wynes & Nicholas 2017) • Encourages meanings of sufficiency, and awareness of natural rhythms.
Energy consumption	<ul style="list-style-type: none"> • Constrained system - Stored electricity in batteries • PV system and power output • Household appliances 	<ul style="list-style-type: none"> • Energy efficient behaviours • Understanding of power usage of household appliances 	<ul style="list-style-type: none"> • Conservation of energy 	<ul style="list-style-type: none"> • Recrafting of elements 	<ul style="list-style-type: none"> • Direct improvement through use of energy supplied by renewable solar • Direct reduction through curtailment of use.
Electric Lighting	<ul style="list-style-type: none"> • LED lights • Constrained system - Stored electricity in batteries • 	<ul style="list-style-type: none"> • Understanding of power usage of lighting products • Managing consumption linked to battery charge 	<ul style="list-style-type: none"> • Conservation of energy • Make do, rather than upgrade PV 	<ul style="list-style-type: none"> • Recrafting of elements 	<ul style="list-style-type: none"> • Direct improvement through use of energy supplied by renewable solar
Provisioning the home (acquiring)	<ul style="list-style-type: none"> • Recycled building materials • Second hand clothing stores 	<ul style="list-style-type: none"> • Environmental impacts of different energy sources 	<ul style="list-style-type: none"> • Conservation of energy • Valuing second-hand materials • Avoidance of consumerism • Simple life / voluntary simplicity • Reducing ecological footprint 	<ul style="list-style-type: none"> • Recrafting of elements 	<ul style="list-style-type: none"> • Direct reduction through consumption reduction • Indirect reduction through changes in consumption patterns • Reduction in embodied energy / Lifecycle emissions intensity of acquired goods

Domain – Dwelling the house					
Practices	Elements			Type of intervention into 'mainstream' practice (Spurling & McMeekin 2015)	Sustainability impact of practice (Schanes, Giljum & Hertwich 2016; Seyfang 2009)
	Materials	Competences	Meanings		
Household cleanliness, laundering and hygiene	<ul style="list-style-type: none"> • Vacuum cleaner • Constrained system - Stored electricity in batteries • Bucket showers 	<ul style="list-style-type: none"> • Understanding of power usage of household appliances • Linking weather patterns to electricity supply 	<ul style="list-style-type: none"> • Household cleanliness • Sufficiency (broom over vacuum) • Voluntary simplicity 	<ul style="list-style-type: none"> • Recrafting of elements 	<ul style="list-style-type: none"> • Direct reduction - through curtailment of use.
Heating and cooling	<ul style="list-style-type: none"> • Pleasant climate • Wood heating • Electric fans (no A/C) 	<ul style="list-style-type: none"> • Understanding of power usage of household appliances 	<ul style="list-style-type: none"> • Sufficiency 	<ul style="list-style-type: none"> • Recrafting of elements 	<ul style="list-style-type: none"> • Direct reduction - through curtailment of use. • Use of efficiently / sustainably produced wood for heating • Energy for fans / heating from renewable solar
Disposing	<ul style="list-style-type: none"> • No rubbish collection service (lack of material) 	<ul style="list-style-type: none"> • Knowledge of appropriate ways to dispose of waste, compost etc. • Visual feedback of waste generation 	<ul style="list-style-type: none"> • Reuse of resources • Avoidance of waste • Greater cost of disposal vs recycling • Avoidance of excess packaging 	<ul style="list-style-type: none"> • Recrafting of some practice elements 	<ul style="list-style-type: none"> • Indirect reduction - through changes in disposal patterns by donating or reselling • Indirect improvement – change disposal behaviour – food waste collected for composting
Toileting	<ul style="list-style-type: none"> • Specific toilet design features to facilitate composting • Shared and individual toilets • Human waste • Additional carbon (e.g sawdust) • Compost produced 	<ul style="list-style-type: none"> • Legal standards for composting toilets • Assessment procedures in community to gain compliance • Building and design skills to create toilet buildings • How to maintain functional composting conditions • Avoidance of odours 	<ul style="list-style-type: none"> • Independence and self-sufficiency • Conserving resources • Re-valuing waste as a resource • Water conservation 	<ul style="list-style-type: none"> • Recrafting of all the elements of practice • Changes how systems of practice interlink 	<ul style="list-style-type: none"> • Avoided material and energy costs of sewage network and treatment • Indirect reduction and indirect improvement through regeneration of waste into valuable fertiliser product by composting

6.5 Food provisioning

This section explores the Bundagen Community practices that emerged as the most important for household environmental sustainability within the domain of food provisioning and consumption. This domain is a significant one when considering environmental impact. As a consumption category, food accounts for 16% of Australian per capita GHG emissions (Hertwich & Peters 2009), and food was identified as one of the priority fields for action in order to minimise the environmental impact of household consumption in Section 2.1.1 (Spangenberg & Lorek 2002; Tukker et al. 2010). Within the Bundagen Community, the ecological footprint analysis undertaken (See Chapter 5) suggests that food consumption was the largest component of the footprint of an average community member (see Figure 6-8). It also found that the food component of the footprint was on average close to 25% less than the Coffs Harbour regional average – and even less compared with the national average (ACF 2007). Therefore, exploring the practices related to food provisioning and consumption provides insights into an extremely important aspect of household consumption.

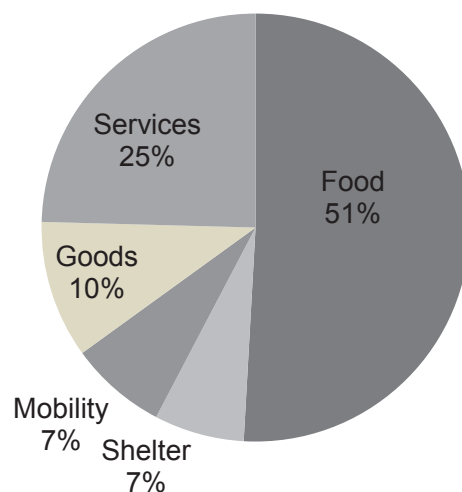


Figure 6-8: Relative contributions by component to the average Bundagen community member ecological footprint.

Spaargaren (2011) listed the following practices as relevant to the governance of sustainable consumption within the domain of food: dining out, shopping for food, cooking for friends, food on the move, eating in a canteen, and kitchen-gardening. This section will discuss those practices that the residents of Bundagen discussed when talking about the impact of living in the community on their everyday sustainability. In general, they focused on food provisioning practices, specifically growing food and shopping for food (see Figure 6-9). Growing food is similar to the kitchen-gardening practices mentioned by Spaargaren in that it is about households growing food for use in the home. It is given a different name as kitchen-gardening implies a small-scale food growing that does not always seem appropriate for the food growing practices within Bundagen.

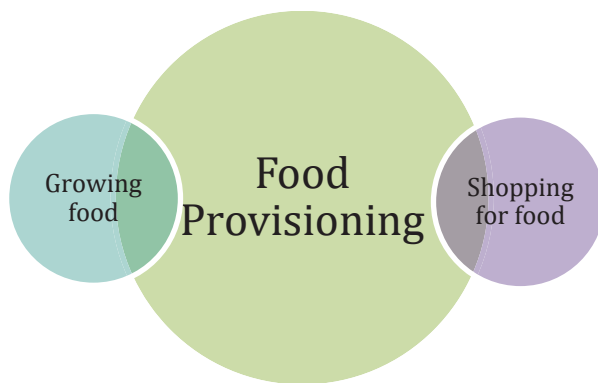


Figure 6-9: Food provisioning practices to be discussed in this section

6.5.1 *Growing food*

The practice of growing food at Bundagen basically occurred in three different ways: vegetable gardening, cultivating fruit trees, and raising animals. Vegetable gardening and fruit cultivating are both common, and generally interlinked, practices. Whilst cultivating fruit trees shares many elements with gardening, it seemed to differ in some ways as well, for example fruit trees take much longer to grow and bear fruit, and once established can keep producing fruit for many years, so people seemed to become more invested in their trees than in any particular plant in a vegetable garden. Raising animals as a practice was less widespread, basically limited to chickens. Some people discussed the idea of keeping goats, however any kind of hooved animal seemed to be a contentious topic due to the potentially negative impact on the land, and was not currently occurring. Dietary practices will be discussed further in the section on shopping for food. Vegetarianism was common throughout the community, but there was no strict dietary code amongst residents, with everyone free to follow the diets they preferred.



Figure 6-10: Large garden shared by a couple of residents

All interviewees practiced some form of gardening (Figure 6-10 shows an example of a large garden cultivated by some community members). Bill and Janelle thought that half their food supply came from their garden and fruit trees, and they estimated that about half the Bundagen residents had 'decent gardens' supplying about half their food needs. This correlates quite well with the responses from those who completed the ecological footprint survey, which estimated that 20% of food consumed was sourced from people's gardens. Allan was one resident who was particularly proud and passionate about his garden, and he estimated that he produced 80% of his vegetables and 10-15% of his fruit from his organic garden. He described the different fruits and vegetables he was growing, and some of the reasons behind his planting choices:

So I grow... well, I've got berries, and passionfruit and pawpaws and bananas... Raspberries, mangoes, there's quite a variety of fruit... and citrus. But the trick is to try and get varieties that give you foods at different times. And I've been enjoying growing my garlic and ginger, and corn and tomatoes, okra... you know capsicum, potatoes, sweet potatoes, pumpkins... I'm just experimenting with an autumn crop of asparagus, so you cut half one year and another half the next, or one in spring and one in autumn. Yeah, so it's not a large area, but for one person... I grew onions this year, so things like that have been good... and herbs. What I love is that... because it's all here, it's all fresh. I only pick what I need for that time, it's not that I go to town once a week and have a fridge full of vegies that I don't use half of them because I'm not going to use them. And I give quite a lot away... (Allan, 34 years).

Even Jane, who described herself as not having 'a big garden like a lot of my neighbours do', was still able to provide for a number of her needs, saying 'all my herbs, and a lot of my fruit come from the

garden'. She was also able to rely upon the sharing networks to supplement her own garden produce:

I get given a lot of, you know, salad greens and pumpkins and things like that... All the time, actually people share their produce, which is really nice (Jane, 12 years).

There is a food cooperative that opened occasionally through the week and provided an avenue for people to share excess food with other community members from one of the common houses. However, it didn't appear to be particularly successful and most members talked about sharing produce with neighbours or friends in the community rather than using a centrally organised system.

As well as vegetable gardens, a lot of residents also cultivated fruit trees. Some seemed to have a particular focus on fruit trees. For Chris, planting fruit trees such as mangoes and olives on his land was one of first things that he did when establishing his home at Bundagen, and Mick prided himself on his bananas. Chris found himself faced with a personal conflict, as he wanted to build himself a new house, but creating space for the house would require cutting down some of his fruit trees, which he had as yet not been able to bring himself to do. This highlighted some differences in growing fruit trees as a practice compared with vegetable gardening, because of the longer time investment required before trees become established and produce fruits. Some of the newer residents had recently organised a survey to audit all of the fruit trees within the community, and what time of year they would be fruiting. They found approximately 3500 fruit trees. One of the younger and more recent residents was known to organise and pick whole fruit trees when they were fruiting, as were some of the kids on the community, however a few people mentioned thinking that nothing organised had come from the fruit tree audit. Nevertheless, it was evidence of newer attempts to improve food self-sufficiency within the community.

The growing of food was a widespread practice within the community, with most residents having at least a small garden. However, communal gardening was a less common practice within the community. Historically it appeared to have been widespread. Bill and Janelle's village used to have a '*huge*' communal garden, and they thought most villages did. However, now some residents in the Hamlet village were specifically mentioned as an uncommon example of neighbours who shared a large garden, along with a large garden that had been communal at one stage, but was now operating as a commercial farm instead.

In recent years there had been some discussion and planning about reviving communal food growing practices within the community. This was partly led by the motivations of newer residents to become more self-sufficient in food production. Many interviewees felt that the Bundagen Community could and should be much more self-sufficient in their food production. Sandy, for

instance, acknowledged that plenty of people had been *'doing stuff'* previously, yet felt that much more should be done:

I feel like we're doing pretty well, but I feel like there's still a whole lot more work to do and yeah, and most of that is around food ... (Sandy, ~5 years).

Sandy thought one reason for this was that some residents who had been *'very communal in the past'* had become a bit burnt out, and so didn't have the energy to start or maintain communal food growing projects. Mick pointed out a significant, and justifiable, reason contributing to the lack of energy, that *'the average age here [on Bundagen] is 66 or something'*. Another reason, which Phil reflected upon, was that:

we've [Bundagen's] got a wealth that really has given us the luxury of kind of picking and choosing our causes and yeah I'll be highly critical, we really haven't embraced our food sustainability... (Phil, 10 years).

It seemed that there were varying levels of motivation to increase the amount of food grown within the community. Some members were getting old, so had some physical limitations to how much gardening and cultivating they could do. From others, Sandy had got the feeling that it was more that *'we don't have the energy to be the driving force, but we're more than happy to see it happen and more than happy to help.'*

It did appear that a number of members were motivated to increase food growing within the community and this had been a popular topic during the recent visioning weekend. These plans by community members to intervene to encourage the growth of a practice will be discussed further in Chapter 8, in a look at the way the community has intervened in the make-up of practices.

The practice of growing your own food was one that most Bundagen Community members valued as important, and one they felt could and should become more prevalent within the community. The idea of self-sufficiency is a motivation shared by many – Bob called it a *'bottom line for nearly everyone that's here'* – and one that has been discussed previously as an element of many of the practices discussed at Bundagen. Related meanings included a desire for independence and food security, meaning having the ability to feed oneself if needed in times of future crisis, and to be able to take on a personal responsibility for providing life's essentials.

There were other meanings and ideas that came out as equally significant elements in the food growing practices of many in the community. Plenty of residents talked about buying local and organic food, with Chris guessing that everyone at Bundagen was likely to use organic gardening methods (for him this was primarily related to the avoidance of pesticides and the use of home produced compost as fertiliser). Allan provides an excellent example of the importance of these other meanings in the formulation of food growing practices. For him growing his own food was

desirable as a means of providing reliably organic food, and was also seen as much more convenient. As he described:

I have no aspiration to be self-sufficient, that's not what I'm interested in. It's actually convenient, I think it's less work working in the garden than it is getting in the car going to the shops and battling down the aisle. And it's so much fresher and nicer and I know it's organic. And I look at it this way. If I had to go and buy organic vegetables, they come at a premium, so if I'm able to produce organic vegetables, that's, it's a way of earning money for me, because by not spending the money, I'm saving the money and therefore I don't have to go and earn, generate... that's another aspect to living a sustainable lifestyle (Allan, 34 years).

The value placed on organic food (which will be discussed more in the shopping for food section), and the extra cost normally involved in buying organic provided an incentive for Bundagen residents to grow their own.

Allan's comments on the convenience of growing his own food is an interesting viewpoint, and one that in effect inverts the common perception of convenience food (as discussed in Shove (2003) as long-life or frozen food kept on hand to be used whenever desired. It is easy to see how this meaning of convenience is closely linked to Allan's gardening competence and practical know-how, acquired through years of food growing, as well as the ready availability of land suitable for gardening, a key material. Because he is a skilled practitioner, convenience is a meaning that he can incorporate into his practice-entity of gardening. It is doubtful that it is a perception shared by those with less skill and experience growing food. Bob thought that convenience and cost was a factor in limiting the scale of food growing practices within the community, as whilst there was a desire to do more, 'it's so easy to go to Woolworths even if you're on the dole'³⁷ (Bob, 33 years). Trevor would definitely put himself in the category of someone who hadn't acquired the motivation to adopt a food growing practice, saying 'I'm an eater and if people are growing I'd buy here but I'm slack' (Trevor, 33 years).

Interestingly, Sandy mentioned that he also felt that people outside of the Bundagen Community expected the community would be doing more to grow their own food:

When you talk to people who don't live here and say where you live... they say "well you'd be growing all of your own food there then", and you sort of say "well, nah"... "you'd have community gardens and be growing your meat and so on and so forth" and it's well.. we don't, you know (Sandy, ~5 years).

Although probably not the major motivation for Sandy's interest in growing food, the expectations from 'outside the gate' that Bundagen would be more self-sufficient in their food production is something that he is aware of, and has reflected on to some degree. This raises a question about

³⁷ Australian term for welfare payment

the influence that external perceptions, and the motivation to live up to those expectations (and also to avoid negative stigma), can have on consumption practices within a community that has self-associated with principles of environmental responsibility.

As with other practices discussed previously, individuals within the community were carriers of widely varying levels of food growing skill and know-how. There were some highly skilled gardeners, such as Allan. He talked about planting different crops and trying different harvesting techniques to provide food throughout the year, as well as cultivating dwarf varieties of fruit trees to grow a greater range of produce in smaller area. There was also a household that ran a commercial garden, selling produce outside of the community.

Knowledge of how to create good soil was mentioned as an important aspect of gardening. It was perhaps something that members of Bundagen had a higher level of general knowledge about, as it is related to the creation of good compost from the composting toilets. Some residents mentioned that generally the soil wasn't particularly good for growing food, however the practice of compost toileting provided a material element – a nutrient rich compost resource – that could be used for fertiliser to build up soil.

There were some ways in which food-growing competences were spread throughout the community. The food group was something that had begun roughly six months prior to the interviews, with a group of people coming together to improve food growing practices in the community. This provided an obvious example of a community of practice, based around a common interest in which competence could spread. Sandy, who was a member of the group, also discussed using a book describing the Mandala gardening system³⁸ that was being used as a formal text to guide practice by some of the members of the food group.

Most knowledge sharing seemed to happen through informal networks (as did actual physical sharing of food). There were a number of people who could be considered 'expert' gardeners, and repositories of knowledge, and community networks within Bundagen provided a means for people to find and learn from those 'experts', should they have the motivation.

Bundagen possessed all of the material elements required for food growing to occur. It had an excellent climate, which provided plenty of year-round rainfall, and warm temperatures that allowed a wide range of fruits, vegetables (and potentially animals) to be grown. As well as a conducive climate, the communal infrastructure included a series of dams that could be used for

³⁸ A mandala garden is a permaculture concept combining aesthetics and practicalities, discussed by Lisa Woodrow in her book *The Permaculture Home Garden*. It is a raised circular garden divided by walk-through paths to be easily accessible, facilitate rotation cropping and be aesthetically interesting (http://www.appropedia.org/Mandala_garden).

water. Even though roughly half of the Bundagen land area was protected by a conservation agreement, there was a large amount of open space available to be used for creating gardens. The layout of the community, based around clustered villages, set out to maximise the amount of land that remained open space and could therefore be used for growing food. The 'sphere of influence' concept that gave people a 'stewardship' over a section of land accommodated space for gardening.

The community shared a number of resources such as tractors and lawn mowers (generally shared by each village) that community members could access to help them work the land.

The practice of growing food was widely discussed, and appeared to be a particularly dynamic practice. The following section will focus on the complementary practice in the provisioning of food for a household – shopping.

6.5.2 *Shopping for food*

Food provisioning and consumption practices are inevitably linked, as what is bought or grown is eaten, and people buy what they plan to eat. When compared with food growing practices, shopping practices were not discussed anywhere near as frequently by the interviewees when talking about important factors in everyday sustainability. This can at least partially be explained by the focus of questions on the impact of living in the Bundagen Community of everyday sustainability, as the practice of shopping for food is generally performed away from the household, in a grocery store, or the supermarket, whether someone lives in an intentional community or not.

The answers to the ecological footprint survey do provide some insights into the food purchasing decisions (reflecting meanings and knowledge to some extent) made by community members. It was previously mentioned that most if not all Bundagen residents were thought to use organic gardening methods. Some interviewees did highlight their commitment to buying organic produce, with Teresa (13 years) for instance saying that '*All the fish and meat we eat, and chicken, it is all local, grass fed, organic*'. For Allan, it did not need to be strictly organic, but he was still making conscious choices about the sources of his food purchases, stating that '*where I can get it I get free range and grass-fed food*'.

The responses to the ecological footprint survey showed that buying organic foods was also important for most households (See Table 6-4).

Table 6-4: Average percentage of organic food consumption within Bundagen

<i>Food category</i>	<i>Average percentage organics</i>
<i>Fruit and vegetables</i>	50%
<i>Dairy</i>	48%
<i>White meat</i>	53%
<i>Red meat</i>	45%

On average, the respondents estimated that roughly half of all food consumed was organic (including fruit and vegetables, dairy, white meat and red meat³⁹). This would put the average resident in the category of highly committed organic purchaser, as less than 10% of the Australian population would usually spent more than 40% of the household food budget on organics foods (Mascitelli et al. 2014).

Organic food purchasing is often used as an heuristic to signify food that is healthier, better for the environment and of higher quality and taste (Schröder 2013). It can be expected that these three meanings are all of significance within Bundagen too, although the focus of the interviewees was generally environmental impacts. Surveys of Australian shoppers have found that the main perceived benefits of organic foods were that they were chemical free (80% of respondents), additive free (77%) and environmentally friendly (68%) (Mascitelli et al. 2014).

Janelle illustrated how different meanings can compete to alter practices such as food provisioning, and perhaps highlighted a generational difference in the importance of buying organic foods. As she explained:

I find that difficult at times because I have grown up with not a lot of money so I am more conscious of spending money, but my daughters totally buy organic they think that that's the most [important]... and my grandson you know that's one of the most important values they have got out of their life with us perhaps ... well I don't do it as much as they do it... (Janelle, 36 years).

Janelle was sometimes reluctant to buy organic food because of the cost premium that is generally attached, whilst her children and grandchildren were happy to bear that burden.

Buying local produce was also important for many residents. The footprint survey respondents estimated 30% of food came from local sources (along with 20-25% that came from household gardens). Jane's view was quite typical:

³⁹ For meats, chemical and pesticide free was included under the 'organic' option

a lot of the red meat... I buy from the supermarket. But other meat you know, chicken and pork and stuff I try to buy from the local suppliers, or the local butchers (Jane, 12 years).

The reasons for buying local were not articulated by the residents in the interviews. Local food is generally associated with a range of beneficial production practices such as organic farming, so it often can serve as a useful proxy guide to environmentally sustainable purchasing (DeWeerd 2009). The sustainability of locally grown food is complicated as food that is grown locally (with low food miles) but in a heated greenhouse can have a larger carbon footprint than food grown internationally that didn't use greenhouse heating, or was heated with renewable energy (Schanes, Giljum & Hertwich 2016).

Bundagen had an area dedicated to a food co-op within the communal buildings area, that provided a space where some garden produce could be shared or sold amongst the community, and bulk buying of dry goods could occur. Theoretically, this could alter the shopping practices of the community members by removing much of the travel required to acquire basic foods, however it wasn't used much by the community. An expanded co-op, *'where we can actually store more dry goods and farm them out as they come in large quantities, farm them out to each other from a single depot'* (Mick, 13 years) was another of the plans that had emerged from the visioning weekend.

The final aspect of food provisioning within the Bundagen community worth exploring is the consumption of meat. As Weber & Matthews (2008) point out, meat consumption, particularly red meat, is a very significant contributor to household environmental impact. A couple of the interviewees specifically mentioned being vegetarian or vegan, and the community kitchen is only used for vegetarian cooking. In fact, a sign on one of the community buildings jokingly describes Bundagen as a 'unique reserve protecting a small pocket of the endangered humanoid species "The Hippy"', and notes that 'offering them lollies or meat could be frowned upon.' Over 40% of respondents to the ecological footprint survey never ate red meat, which indicates a much lower meat consumption than the norm across the general population, given Australian's consumed more meat per capita than any other country in the world in 2014 (Ting 2015). The encouragement of vegetarian, vegan and low meat consumption meanings within the community can significantly support the improved sustainability of food practices.

6.5.3 Summary

Food provisioning practices, particularly growing food themselves, were keenly discussed by the Bundagen residents. This reflected a bundle of practices that residents found important for living a more sustainable lifestyle.

Food growing is a practice that 'competes' directly with shopping for food within the practice ecosystem that a household is part of, as both are about provisioning the household with food. The performance of this practice varied substantially within Bundagen. For some it was just kitchen gardening for herbs in a manner similar to many households. For some people their gardening practices were so extensive that they had significantly replaced shopping as a way of gathering food. To some extent this may have been related to the ageing of the founding residents, however any interventions to encourage greater uptake of gardening by the community were fairly minimal. The key elements of the practice are listed in Table 6-5. The general use of organic food growing techniques⁴⁰, and the lack of food miles associated with home-grown food are generally considered more sustainable methods of food production (Tukker et al. 2010; Weber & Matthews 2008a).

Table 6-5 summarises these food provisioning practices and describes the type of intervention occurring within the practice, and the sustainability significance of that practice.

⁴⁰ Environmental benefits of organic food as summarised by the Food and Agriculture Organization of the UN (FAO 2016):

- Well managed organic systems with better nutrient retentive abilities, greatly reduce the risk of groundwater pollution from synthetic fertilisers and pesticides
 - Beneficial to soil - The length of time that the soil is exposed to erosive forces is decreased, soil biodiversity is increased, and nutrient losses are reduced, helping to maintain and enhance soil productivity.
 - Organic agriculture reduces non-renewable energy use by decreasing agrochemical needs (these require high quantities of fossil fuel to be produced). It also contributes to mitigating the greenhouse effect and global warming through its ability to sequester carbon in the soil.
 - Organic farming produces more biodiversity than other farming systems.
-

Table 6-5: Key food provisioning practices and elements at Bundagen Community Cooperative

Domain – Food Production and Consumption					
Practices	Elements			Type of intervention into 'mainstream' practice	Sustainability impact of practice
	Materials	Competences	Meanings	(Spurling & McMeekin 2015)	(Schanes, Giljum & Hertwich 2016; Seyfang 2009)
Growing food	<ul style="list-style-type: none"> • Suitable land for gardening • Good climate for growing • Community design that maximises open space • Compost from composting toilets • Shared resources (e.g. tractor) • Shared land for gardening 	<ul style="list-style-type: none"> • Various gardening skills • Appropriate varieties for climate • crop rotation • appropriate harvesting techniques • use of dwarf varieties to increase yield • Sharing networks to spread out bulk harvests 	<ul style="list-style-type: none"> • Self-sufficiency • Being responsible for ones' own needs • Food security • Value of organic food • Value of local food • Convenience (fresh food on doorstep) • Saving money • (Hard work) 	<ul style="list-style-type: none"> • Recrafting of elements of growing food to increase the scale. • Substitution of growing own food instead of buying food from existing networks 	<ul style="list-style-type: none"> • Localisation – increasing self-reliance, reducing supply chain length • Building new infrastructures of provision – through alternative food supply chains • Reducing ecological footprint of consumption • Indirect reduction – growing your own food - Home-grown produce reduces transportation requirements (both distribution and personal shopping) • Direct improvement – more efficiently produced food - Organic agriculture delivers a number of benefits
Shopping for food	<ul style="list-style-type: none"> • Isolated location of community • Easy availability of local and organic produce in surrounding towns 	<ul style="list-style-type: none"> • Knowledge of impacts of different food types e.g. food miles, local, organic, 	<ul style="list-style-type: none"> • Prevalence of vegetarianism, veganism and low meat consumption • Value of organic food • Value of local food • Cost vs organics 	<ul style="list-style-type: none"> • Recrafting of elements of cooking practices with more sustainable materials • Recrafting of meanings driving food purchasing practices 	<ul style="list-style-type: none"> • Reducing ecological footprint of consumption • Direct reduction – consumption reduction - eat less meat - eating a plant based diet saves (0.8 tCO₂e saved per year) (Wynes & Nicholas 2017) • Direct improvement – purchase of more efficiently produced products – substituting vegetable (or dairy based) proteins for meat proteins

6.6 Summary

This chapter has identified, and explored in detail the key practices influencing the sustainability of daily life in Bundagen. This exploration has widened the application of social practice theory to present a new analysis of consumption within intentionally sustainable communities. The process of identifying key practices influencing the sustainability of daily life in Bundagen highlights the complexity of daily life, and the way that countless practices mesh together in a complex amalgam of different practices and elements. This chapter has categorised the practices discussed into higher level domains, as well as identifying the key materials, competences and meanings in a clear and robust manner. The domains and practices discussed are summarised in Table 6-6.⁴¹

Table 6-6: Practices and domains of practice discussed at Bundagen

<i>Domains</i>	<i>Bundagen Practices</i>
<i>Creating home / community</i>	Creating a cohousing community
	Designing a cohousing community
	Community formation (joining and leaving)
<i>Governing home / community</i>	Community Decision Making
	Visioning & Reflection
<i>Dwelling the house</i>	Energy provisioning
	Provisioning the home (acquiring)
	Electric lighting
	Disposing of waste
	Heating and cooling the home
	Energy consumption
	Household cleanliness, laundering and hygiene
	Toileting
<i>Food</i>	Growing food
	Shopping for food

Different elements of meaning, material and competences all interact in the spectrum of practice entities present within the Bundagen community, which are themselves a subset of the global practice spectrum. Within Bundagen there is no homogeneity of practice performance, even with respect to practices that are widespread in Bundagen but uncommon elsewhere, such as compost toileting.

This chapter has presented very detailed accounts of the genealogy of a number of practices within this Australian intentional community. This was illuminating for the understanding of why a certain practice is performed a certain way within Bundagen, or even how a certain element became

⁴¹ Transport practices are not discussed in this section as there was not much mention within Bundagen. The community is 15-25 km from the nearest towns and the average age of the community is over 50, so cycling is limited other than inside the community

established. However, there are many threads that weave together into an observed practice, and an outside observer can only ever hope to trace some of the most apparent threads. Yet even a partial view is valuable for the insights into the factors that could shape practices in other contexts. To illustrate this, consider the use of off-grid household solar power, which is a material element that contributes to reduced impact from household consumption across many practices. This was an element in the house-building practices of all community members, because it was scripted in the rules of the community (competences) and the material structure of the community (material) due to the absence of a grid-connection which could have provided an alternative. This can be seen as representing a physical encoding of the values agreed upon by the community members during the initial performances of community creation. This process in itself was enabled by the performance of intentional community creation, which is an uncommon practice that allowed the formation group to make decisions about community infrastructure (physical and legal) that would impact the lifestyles of a whole group of people. This process was itself guided by certain values that many foundation members held about conservation, self-sufficiency and anti-mainstream consumer society views. But these values themselves would not have sufficed; the presence of requisite know-how about intentional communities, from founding members who had also lived in other intentional communities, and knowledge those networks could provide, were crucial in enabling the community creation, which enabled the off-grid solar power, which meant that in 2014 Jane would vacuum her house in the middle of the day on sunny days.

Useful insights can be gained from analysing the everyday practices of a community like Bundagen. There are a number of examples within the community of interventions to encourage environmentally sustainable practices. This occurred through both substitution e.g. clothes swapping, greater resource reuse and recycling, cycling, increased food production, and the recrafting of the elements of practice such as the off-grid, renewable infrastructure, that make important contributions to the improved sustainability of many practices.

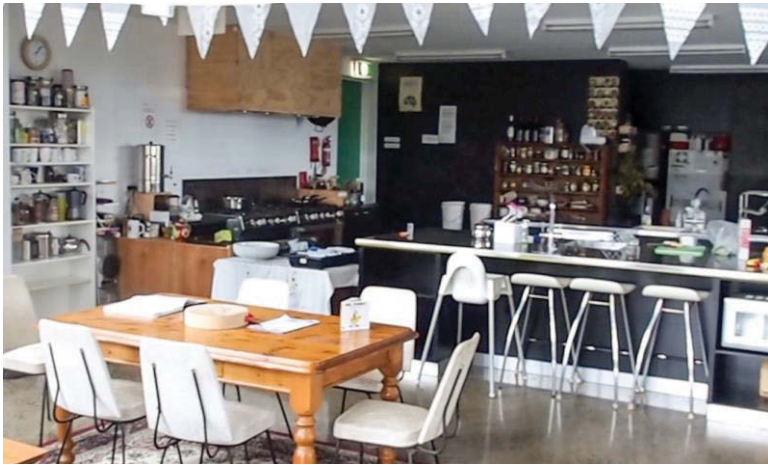
As well as these interventions that directly linked to resource consumption or environmental impacts, there are a number of other practices that would be unusual in mainstream neighbourhoods, and clearly significant in the function of the community. These practices, related to the creation and governance of the home and community, were particularly significant in allowing the community members to act as 'policymakers', shaping the socio-technical context at a scale that could impact many elements of everyday practice. It also gave the community a process for ongoing, reflexive monitoring of the impact of sustainability interventions, in a way that was grounded in a very specific understanding of the system of practices within the sphere of the Bundagen community. These ideas and insights will be discussed further in the later chapters of this thesis.

Chapter 7. Sustainable consumption practices at Murundaka Cohousing Community

7.1 Introduction

This chapter explores the practices and elements that Murundaka Cohousing Community (Murundaka) members discussed as helping them to live in a more environmentally sustainable manner. It is structured in the same way as the previous chapter, with the addition of a section considering *mobility and transport* related practices, which were discussed at length by the Murundaka residents. Figure 7-1 shows a selection of images taken from the case study visit to the community to provide some context for this chapter.





e) Shared kitchen in common house



f) Street frontage of Murundaka



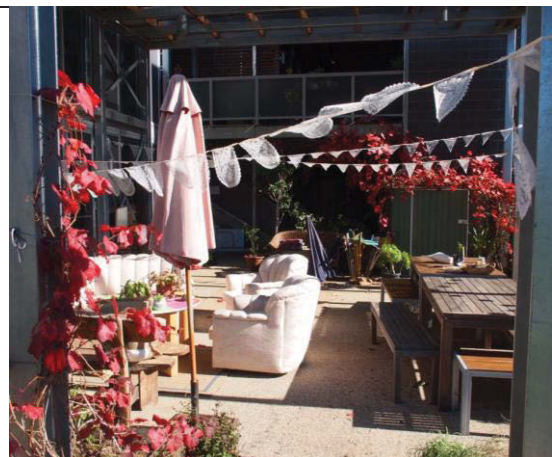
g) Alternative view from the back garden



h) Bike shed at the front of Murundaka



i) Outdoor common space



j) Alternative view of outdoor common space

Figure 7-1: A selection of photos of Murundaka, both indoor and outdoor.

7.2 Creating home and community

The following section will look at the bundle of practices which are illustrated in Figure 7-2. These are the practices related to the creation of a community, such as community formation, designing a community and group growth and contraction.



Figure 7-2: The domain of creating home and community, and the practices discussed in this section

7.2.1 Formation of Murundaka

The story of the formation of Murundaka, as is often the case with intentional communities, goes back a long way. The seeds of the cohousing community vision were planted and nurtured in the 1980's in the Earth Common Equity Rental Housing Co-operative ('Earth Co-op')⁴². However, the majority of the actual planning and building of the cohousing development took place relatively rapidly in the late 2000's. The gestation period can be seen as a time when elements of knowledge were gathered by some of the key participants in the practice of community creation, and the ideas and motivations for forming the community evolved. When the material element of appropriate land became available, all the necessary elements were present for the community to be created.

Earth Co-op, of which Murundaka and all its households are a part, was founded in 1986, purchased its first property in 1989 and grew to a size of eleven households eight years after founding (Murundaka Cohousing 2016). Earth Co-op was only one of many common equity rental-housing

⁴² The objects of the Co-operative are 'To establish a Co-operative for the purpose of providing good quality affordable accommodation for its members under an appropriate tenancy agreement, in an equitable and efficient manner' (Earth Co-op n.d., p.5)

cooperatives (CERCs) that were founded in Victoria in the 1980's⁴³. Whilst many of these cooperatives were focused purely on housing, Earth Co-op, as the name suggests, had an '*environmental consciousness about it, to some extent at least*' (Giselle, 6 years⁴⁴). This set it apart from many Victorian cooperatives.

Two members of Murundaka, Iain and Giselle, were part of Earth Co-op in its formative years (30 years ago). They also founded the Murundaka Cohousing Community. Information on the early period of the community comes predominantly from interviews with Iain and Giselle and the history section of the Murundaka website (Murundaka Cohousing 2016). Iain said that they wanted to create something like Murundaka - a '*small cluster of communities*' - when the co-op program was first started. He noted however that he felt Melbourne was not receptive to this type of project at the time. This vision of community living drew on experiences from other intentional communities on the NSW North Coast (including Dharmananda and Bodhi Farm) during the 1980's.

A couple of external organisations played important roles in the formation of Murundaka. Common Equity Housing Limited (CEHL) acted as a coordination and administration body for all Victorian housing cooperatives (CERCs), including Earth Co-op⁴⁵. CEHL is an '*all-rental, social housing program that provides quality, long-term housing to Victorians*' (Murundaka Cohousing 2016). The organisation that would go on to become CEHL was formed in 1986/87. Whilst the environmental focus of Earth Co-op was fairly unique amongst the CEHL cooperatives, Earth Co-op was an active member from the start. Over the years, two members of Earth Co-op held the position of Chairman of the CEHL Board, and others have served as board members. CEHL would eventually act as the developer for the construction of the cohousing community.

Also important in the formation of Murundaka was the Sustainable Living Foundation (SLF) (SLF 2016), which runs an annual Sustainable Living Festival; the largest festival of its type in Australia. Giselle has been both director and board member during her long involvement with SLF⁴⁶. Several members of Earth Co-op, and later Murundaka, have also been involved with the SLF, '*reinvigorating the sustainable communities and cohousing movement in Victoria and nationally*'

⁴³ '*Earth Co-op is one of around 112 co-ops across the state of Victoria each of which holds a \$1 share in their not-for-profit company... The company [CEHL] holds the titles enabling it to manage the stock and borrowings and the members – all landlord and tenants in their own self-governing, separate legal entities – have security of tenure for life. The program is tenant member controlled.*' (Giselle 2017, pers. comms, 24 June)

⁴⁴ This refers to the number of years that the interviewee has been involved with Murundaka

⁴⁵ CEHL now covers a number of other cooperative models as well

⁴⁶ Giselle founded SLF in 1999 along with Iain Walker and Steve Ingrouille, and has been President throughout most of its nearly twenty years and is currently its president (Giselle 2017, pers. comms., 24 June)

(Murundaka Cohousing 2016). The SLF made an important contribution to the development of Murundaka, as Giselle described:

...in the sustainable living foundation we'd had the green building group focus group, and we'd run forums, we'd run festivals, we had skilled ourselves and educated ourselves (Giselle, 6 years).

The SLF provided an opportunity to build specific knowledge and know-how related to creating sustainable communities and living sustainably. It also created networks of interested professionals that would help Murundaka negotiate the design, planning and approvals stage, as well as providing a fertile recruiting ground for future residents.

This is the context from which Murundaka Cohousing Community was able to emerge. A long involvement with social and community housing, as well as sustainable living, created 'a set of ingredients' that meant the key members of Earth Co-op 'were on the lookout for change' (Giselle, 6 years). Murundaka was not the first attempt at creating a cohousing community, but previously CEHL wasn't receptive to their development ideas.

A new opportunity arose in the mid-2000s. Giselle was then living in a property in Heidelberg Heights purchased by the Earth Co-op in 1990. She found out that the owners of the two neighbouring properties would consider selling their properties to the housing cooperative. After getting support from Earth Co-op, Giselle and Iain approached CEHL in 2005 with the idea of purchasing the properties for a cohousing project. This was the starting point of the project that years later would result in the Murundaka Cohousing Community.

7.2.2 Planning and development of Murundaka

The development process of Murundaka was not typical for a cohousing community (see McCamant & Durrett (2011)). The founding members were aware of this. As Giselle describes:

usually, cohousing would get the people together first, and they would find the land, and they would design the buildings around a particular style. It's usually a circle with cars on the outside and shared space in the middle, that's just common for cohousing all over the world (Giselle, 6 years).

This is the resident-led model of cohousing development (Williams 2008), with residents responsible for all stages of the development. However, as Murundaka was being formed within the housing cooperative network, the core group of future residents involved in the early stages worked with the developer (CEHL) in a partnership model (Williams 2008):

We couldn't do it that way, we had to do it through CEH, we had the land first, and then the buildings came and then the people came (Giselle, 6 years).

In effect, there were two separate stages in the formation of Murundaka: firstly, a core group from Earth Co-op convinced CEHL to develop a cohousing community, secondly, the expansion from the core group to eventual membership once the development was underway.

The first stage involved the core group of Earth Co-op members convincing CEHL to pursue a cohousing development. Further details of this process are provided in Appendix H. Key aspects in this process were the ability of that core group to draw upon expertise in working within the CEHL framework, and being able to call upon experts from the SLF network of professionals to support their proposal. Crucially, Federal Government economic stimulus policy in response to the Global Financial Crisis (GFC) of 2008 made additional finances available for social housing initiatives. These same interventions created an expedited planning approvals pathway for the Murundaka development. The changed circumstances from the GFC aided the successful development of Murundaka.

Final approval for the cohousing development was granted in 2009 and construction started in 2010. Up to this stage, only a core group of future members had been involved (primarily Giselle, Iain and another Earth Co-op member, Matthew). Others had become involved through SLF (Heidi and Chris), or were involved more peripherally through Earth Co-op. A number of major decisions shaping the physical and organisational form of the community had been made by the core group and the developers. These would be difficult for residents who joined later to change. The decision to develop the community within the CEHL network, for example, placed certain governance requirements on the community and prescribed a long-term rental cooperative ownership structure. The physical layout and design of the community had been decided upon and was under construction. The most important elements that shaped the way the practice of community creation was expressed in the first stage of Murundaka development will be explored below. The second stage of community development, when most of the members joined, is then looked at in more detail.

Environmental and social issues were key to understanding why the founding core group members wanted to create a cohousing community, as Giselle explained:

with the knowledge of the climate emergency, and with the knowledge of community as being a really important way of addressing that, and a whole range of other social problems, then we were on the lookout to do something that was more along the lines of community and higher density for a long time (Giselle, 6 years).

For Giselle, the climate emergency (a phrase used to capture the current and imminent negative impacts of climate change (Wilkinson 2016)) was a driving motivation in creating a community that would allow a more sustainable way of living. Iain also emphasised societal unsustainability as a motivation, noting the present structure of society meant *'we need two or three Earth's resources because we're living beyond our means'*. He felt cohousing provided an opportunity to break away from the mainstream model of housing and community, one that wasn't addressing these pressing social and environmental issues:

we all take for granted the way we have been brought up and corralled, and manipulated and sold and marketed and campaigned, and just structured into the intentional way we live in suburbia. It's someone else's intentions but it doesn't often address deep needs, and it doesn't address sustainability needs (Iain, 6 years).

He felt the goal of addressing sustainability needs should be to strive for a *'restorative lifestyle'* that had a positive impact. In particular, he felt social sustainability was a key, neglected area to which cohousing could contribute. As Iain explained:

social sustainability has been more neglected than the other sort of technical areas and solutions. We know we can do our technical areas and solutions in so many areas of life and in energy generation, but of course, the vested interests don't want us to do that... But the social side of things was I think being neglected and not being really addressed. So I've been asking what's the best mainstream solution that can do that? What used to work effectively? (Iain, 6 years).

Of particular importance in Iain's comment is the idea of the best *mainstream* solution. One of the ideals of Murundaka was to be a community that was open and interactive with mainstream society. To this end, it was to be located in urban / suburban Melbourne. This differentiated it from a lot of other Australian intentional communities (such as Bundagen) which placed much greater emphasis on self-sufficiency in rural locations.

The key values that the core group was aspiring to realise with Murundaka are summarised in early internal community documents (Giselle, 2014, pers. comms., 21 May). The '(interim) Core Values of the Community' developed during a discussion at Common Ground Community⁴⁷ in November 2010 were: sustainability, inclusiveness, and social justice (including equity and access).

Iain (6 years) thought of creating a cohousing community as an attempt to recreate the *'positive aspects of the traditional village lifestyle'*, to focus on those positive aspects and figure out what works and what doesn't.

⁴⁷ Another Victorian intentional community with a registered education and training organisation (<http://www.common-ground.org.au/community>)

By the time Murundaka was founded, the core group members carried a wealth of knowledge and competences on how to found and sustain cooperative communities. Iain and Giselle could draw upon first-hand experience living within intentional communities of Northern NSW. Specific competences of cohousing principles were gained from books on cohousing, first-hand experience gained from cohousing study tours to The United States that Iain had undertaken, as well as the strong existing networks and forums the core group had developed through the SLF.

One key factor was the long experience both Iain and Giselle had with both Earth Co-op and CEHL. They had the competence to work through the existing institutional framework of CEHL, and whilst this added complications to the process, CEHL were the key financier and developer of the eventual cohousing community. These existing competences were crucial to the successful founding of Murundaka, because of what Giselle describes as the innovative nature of the community:

It is really unique actually because it is part of this co-op program across Victoria which has been going for nearly 30 years. And this program is doing something that it has never done before with this place. So whilst there are a few other examples of cohousing communities in Australia, only less than a handful, we are the only one in this program and we are obliged to do all these obligatory things in the program. So it was complicated, not a perfect fit, and we're trying to make it work with everything we were up against (Giselle, 6 years).

Given the importance of appropriate land for a cohousing development, access to finance to acquire land is crucial. The fact that the land where Murundaka was eventually located was adjacent to a property already owned by CEHL made the process of gaining support from them easier. CEHL's support was important because it was a source of finance for the development. The other benefit of this particular piece of land was that Giselle also knew when adjacent properties would be available to buy before they were actually on the market. This gave the core group more time to convince CEHL to support the development.

The material presence of suitable land was crucial in the eventual creation of Murundaka. The ideal of creating a cohousing community that was part of city life meant land was more expensive and came with added restrictions and complications. In the case of Bundagen, rural land was generally more affordable, and the group were able to draw upon far more people to share the cost of purchasing the land. Whilst it can be hard to claim that any one particular piece of land was essential for the creation of an intentional community, land can crystallise the vision of the community to the point that funding can then be obtained, whether from future residents or from other institutions like CEHL.

7.2.3 Designing the cohousing community

Murundaka Cohousing Community was created by a partnership between a core group of future residents and a developer (CEHL). This model diminished the influence that both parties had on design and construction decisions. The fact that the core-group were members of one of the cooperatives that formed the CEHL organisation (and had been directors of CEHL in the past) would also have influenced the decision-making process.

The concept of the cohousing design was driven by the core group. Giselle and Ian are the only residents still living in Murundaka in 2014 that were involved during the design period:

I was aware of the process because I was basically sitting on the fringe of that process. Giselle and Ian were very involved in it. And at that point in time they were the only people who live here now who were involved in it. So, yeah I was always one step removed (Heidi, 6 years).

Working within the CEHL network, with CEHL as the developer, placed certain restrictions on the ability of the core group to influence the materialisation of the community. Arguments and persuasion were required to convince CEHL to embrace the cohousing concept. The core-group presented a full brief, including concept design, to the CEHL architect outlining the principles behind the cohousing design⁴⁸. However, the group had little control over many areas of the design and final building materialisation. The final design did not incorporate as many sustainability features as the original 10-star concept design. The Design and Construct contract also left many decisions about final build quality to the constructor, with CEHL, Earth Co-op and the architect's office often having limited input into final fit-out decisions.

One of the key principles (See Section 2.5.1 for discussion of the principles of cohousing as outlined by McCamant & Durrett (2011)) of cohousing design is the provision of extensive common facilities for the whole community to use, whilst also providing residents with sufficient private space and facilities. Residents are not forced by necessity to use the common facilities, but increased social interaction is encouraged by creating common areas designed for daily use. The adoption of cohousing principles in the design of Murundaka strongly influenced the material aspect of the community design. Murundaka consists of three buildings, two of which contain private apartments, and the third, which is centrally located, contains the common spaces. The physical layout of the buildings and facilities (including the parking lot), and the provision of extensive

⁴⁸ Earth Co-op worked with EME on the preliminary and concept designs (which can be viewed here <http://emedesign.com.au/project/10-star-apartments>), whilst CEHL engaged Darryl Pelchen Architect for detailed design.

communal spaces are key to the cohousing design. Both the communal and private spaces at Murundaka are outlined below.

The communal common house is designed as the hub of the community and consists of a spacious double-height communal dining hall. The common house contains a commercial kitchen, communal cupboard space and cool room, a large living/dining room with wood burning stove and pool table, and an outdoor seating area. A mezzanine level occupies half of the space of the main room above the kitchen and contains a lounge/library with TV. The ground floor also contains the communal laundry (and open closet), and a pump room, which has been renamed the RUG (resource utilisation group) room and acts as a resource reuse, recycling and consolidation room which tries to capture reusable containers and materials before they enter the waste stream. The first floor contains a communal bathroom and three communal rooms, designed to function as either guest rooms or shared office space. Vehicle parking is located in a single parking lot directly off the street and has 14 spaces. Two bike sheds are located adjacent to the parking lot along the common entrance path, providing a space where 16 bikes can be locked. The site is arranged to create space for a large shared backyard, which is used for a vegetable garden, composting area, chicken run and open space for children to play in.

The private apartments are separated into the east and west wings, each with nine dwellings arranged across three levels. All apartments are self-sufficient (other than laundry), with individual kitchens and bathrooms. The community has a range of apartment sizes designed to accommodate people in different stages of life. The apartment diversity is summarised in Table 7-1.

Table 7-1: Mix of apartment sizes

Apartment type	Size (m ²)	Number
One bedroom	~46 m ²	6
Two bedroom	~68 m ²	6
Three bedroom	~94 m ²	4
Four bedroom	~105 m ²	2

One of the most significant impacts on the perceived sustainability of the community came from the way that Murundaka was conceived and designed. The founding members of Murundaka had a specific image of the design of a housing community; one that emphasised social interaction, increased communal space and helped residents live a lower environmental impact lifestyle through the use of Ecologically Sustainable Design principles. These reflect the cohousing design principles summarised by McCamant and Durrett (2011). Although the founding members did not actually

design the building, they provided the design brief and had enough influence over the design process to ensure key cohousing principles were adopted. Different competences from a traditional housing design were involved. The design incorporated the principles of cohousing with a large amount of shared space, as Giselle describes:

we all gave up the spare room. Or you could call it the stuff room. In lieu of the common spaces. So the guestroom that is downstairs we book and we share it, and so we don't have to have our own spare rooms. We don't have our own laundries; we share a laundry. The workshop, the creative space, the office, all that is shared space (Giselle, 6 years).

In order to maximise the available communal space, the apartments were all designed to be smaller than would be standard for similar, regular apartments by removing things such as individual laundries and spare rooms:

We're all downsizing... our apartment is far smaller than our original homes. (Giselle, 6 years).

Social contact design principles are encouraged in cohousing as a way to encourage casual social encounters and informal socialising. The principles of social contact design which influenced the design of Murundaka include: provision of indoor and outdoor communal facilities; good visibility into all communal spaces; car parking on the edge of the community; gradual transitions between public and private space; provision of semi-private outdoor spaces close to private units for socialising and positioning of key facilities and access points on walkways (Williams 2005b).

Heidi discussed the way the common house design and site layout affected social contact:

Having a common house that you have to walk past on the way home is fabulous. That is really how people can have the option of being drawn in. I think that designing an effective cohousing community involves giving people access, and choice, and awareness of what is going on in the communal spaces without ... forcing them to take part in it (Heidi, 6 years).

She explains that the common house works particularly well for the front block of units, or for those who use the front bike shed, where residents walk past windows of the common house on the way to their apartments, so they can quickly and unobtrusively see what is happening, and decide whether or not to join. It does not work so well for car drivers living in the rear block of flats, because there are no (or few) windows into the common house along the most direct route from the carpark to the rear building.

In creating the concept / design brief for Murundaka community, Giselle and Iain spoke of being informed by knowledge of many other cohousing projects around the world (from Iain's study tours), and research from books and resources on appropriate design:

the issue here is what works and what doesn't work and the Danes have been doing it for years and lots of other societies have been working at it. And size matters, so you know 25 to 30 households, and having wonderful little community facilities which network and bring it together (Iain, 6 years).

Some aspects, such as ecologically sustainable design principles, (passive solar design, rainwater tanks for gardens) and use of participatory design methods were likely competences that the architects and designers already carried. Other ideas around social contact design, and designing a community around central common facilities are less common in Australia, given the small number of cohousing communities, and would likely have relied on competences drawn from areas of design outside of residential homes, or on information from cohousing texts.

The Murundaka common house is designed as the hub of the community, providing space for social activities such as cooking, dining and general recreation. Giselle emphasises that the shared communal space was vital:

So it's the community... It does become the glue, definitely. And just the physical availability of space makes things happen. It's quite amazing. It's a catalyst (Giselle, 6 years).

Households reduced their private space to create a larger number of common facilities. This allows the community to have generous common space, which is actually larger than the general cohousing 'rule of thumb', as Heidi explained:

the cohousing book [McCamant and Durrett 2011], it says you give 10%, so you basically reduce all your houses by 10% of the floor area. And then you add up all those 10% and you put them in the common house. So if we did that our common house would be like two-thirds the size of what is now, so we'd probably have about 200 m² of common house. And that's a gross floor area that they're using. But we have 300 m² of common house (Heidi, 6 years).

The site layout, with the vehicle parking area on the edge of the site, was designed to ensure residents walk around the community, which reflects another important principle of social contact design.

7.2.4 Joining and leaving the community

Compared with Bundagen, Murundaka's formation is quite recent, so it was much easier to gain information about how people joined the community. At the time of interviews, residents first moved in just two and a half years previously, so the majority of members had joined the community less than four years before. Additional details about joining and leaving Murundaka are given in Appendix H.

As Murundaka is part of the CEH program, all potential new members had to be eligible for common equity rental cooperative membership and housing. The criteria for eligibility (in 2016) are based on income, the value of assets owned, and not owning or having a share in the ownership of any residential property (CEHL n.d.). Jude, who joined the group just prior to the completion of construction in 2011, when two apartments became available, remembered having to answer five questions in an essay before attending an interview. The essay questions were designed to find people who would be compatible with the community vision. They asked:

how can you fit in? What skills do you think you can offer? You know, do you have examples of other communities that you have been involved in? What has your housing been like in the past? Things like that... And what role could you take? And how do you, yeah how do you live with others? Stuff like that (Jude, 6 years).

There was significant interest in the apartments. Giselle estimates that between 70 and 80 people were interviewed for the eighteen households. Jude remembers 8 interviews were held for 2 apartments that became available just before construction was completed. Prospective tenants were 'selected on the basis of shared aspirations for environmental sustainability and cooperative living' (Murray et al. 2013, p.74). The initial group was formed in November 2010, one year before they eventually moved in.

Throughout the year the group underwent training, which involved three sessions to be completed by everybody in the CEH program, as well as a fourth session specifically about living in a cohousing community. This year was described as an important phase in the formation of the community, with regular meetings, shared dinners, a weekend retreat at Common Ground community attended by the future community members. Some members ended up sharing houses for short periods of time as leases expired before their places at Murundaka were ready.

The desire for housing that assisted in a more sustainable way of living was an expressed motivation for some of the members of Murundaka, particularly the founders. The Sustainable Living Festival was used for promotion and to recruit future residents, which suggests a lot of the residents would have had some initial interest in the idea of sustainable living. As with Bundagen, the Murundaka

members had mechanisms to try and ensure new residents joining the community were likely to accept the principles and policies that had been established.

7.2.5 Summary

The practices discussed under the domain of creating a home / community are clearly central to the development of the intentional community as a living example of an alternative vision of society (Kunze 2012). They are also perhaps the clearest examples of the community members acting as policymakers of their everyday life (along with the next section on governing home and community); intervening with the aim of improving the sustainability of their lifestyles. These community creation practices are not necessarily directly linked with greater sustainable consumption. Rather they are distinctive, non-mainstream practices that are unusual because of who the carriers and practitioners are – the future community members. They are also strong examples of community building and the presence of collective action processes (Seyfang 2009).

The practice of intentional, or deliberate creation of a community development or apartment complex, is uncommon in mainstream Australian society. As with Bundagen, this practice was in some ways a substitution for traditional practices of buying a home on the open market, and in some ways represent a shift between who performed this bundle of practices, from development companies to the individuals who would be living in the community.

The eco-innovation potential in this practice is in the way the priorities driving the development are changed when the proponents become those who will be living in them. As the construction of a housing development creates infrastructures that are material elements of many practices and last a long time, there is a large potential to influence the sustainability of many practices in this way. To some extent, this addresses the common problem of split incentives in rental properties, where the investment by one party will benefit the other party.

A final aspect of the community governance worth reiterating is that the members were responsible for interviewing and selecting future residents when vacancies arose. By getting potential residents to describe their previous involvement with communities, the skills they could bring to Murundaka etc., they sought residents who could work collaboratively within the community structure, who already carried some of the meanings and competences relevant to Murundaka.

Table 7-2 summarises the practices discussed in this section and highlights the key elements that were either crucial in the way the practice was performed at Murundaka, or most significant in the way that practice differed from more mainstream forms of the practice. As well as this, the table also comments on the type of intervention occurring within the practice, and the sustainable consumption significance of that practice.

Table 7-2: Key practices and elements in the creation and ongoing governance of Murundaka Cohousing Community

Domains: Creating home and community					
Practices	Elements			Type of intervention into 'mainstream' practice (Spurling & McMeekin 2015)	Sustainability impact of practice (Schanes, Giljum & Hertwich 2016; Seyfang 2009)
	Materials	Competences	Meanings		
Creating an intentional community (Murundaka)	<ul style="list-style-type: none"> • Land of appropriate size and location – inner-city • Geographical location • Shared communal spaces 	<ul style="list-style-type: none"> • Skills to turn ideals into visions and plans • Experience in communal living • Understanding of cohousing (study tours and resources) • Group organisation, and working collaboratively • Ability to connect and network with people with legal, planning and financial skills • Experience working in housing cooperatives 	<ul style="list-style-type: none"> • Shared Meanings • Creating a social and cultural alternative to mainstream society • Community as a means of addressing environmental and social issues • A mainstream solution to social sustainability • Core values of: <ul style="list-style-type: none"> ○ sustainability ○ inclusiveness ○ social justice (including equity and access) 	<ul style="list-style-type: none"> • Changing the sequencing in the process of community and home creation (changing how practices interlock) by having future residents involved during the formation stages 	<ul style="list-style-type: none"> • Providing an alternative system for the provision of housing • Community building by developing social networks around developing the community / housing • Collective action – strong sense of acting collectively - enabling collaboration to make effective decisions about things that effect their lives and engage with local government and public policy
Materialising a cohousing community	<ul style="list-style-type: none"> • Sufficient and appropriate land • A mix of private and communal space • Reduced private space for increased common space (give up the 'stuff room') • Specific site layout • Money (government contribution, housing cooperative) 	<ul style="list-style-type: none"> • Organisational structure of community • Cohousing design principles • Social contact design principles • Know how shared by completed cohousing communities • Participatory design 	<ul style="list-style-type: none"> • Design to encourage social interaction • Downsizing of private space to maximise communal space • Ecologically sustainable design principles • Challenge the existing housing development paradigm 	<ul style="list-style-type: none"> • Recrafting by introducing new elements material, meanings and competences into the design of community housing 	<ul style="list-style-type: none"> • Community building through creating inclusive and cohesive spaces for the members • Indirect reduction – changes in the behaviour of using space - sharing space makes more efficient use of space, e.g. reducing wasted heating and cooling energy

Domains: Creating home and community					
Practices	Elements			Type of intervention into 'mainstream' practice (Spurling & McMeekin 2015)	Sustainability impact of practice (Schanes, Giljum & Hertwich 2016; Seyfang 2009)
	Materials	Competences	Meanings		
Community formation (joining and leaving)	<ul style="list-style-type: none"> • Located in inner-city – close to 'everything' • Location makes use of wider 'communal spaces' – parks etc 	<ul style="list-style-type: none"> • Interview and Induction process to ensure compatibility • Understanding that community is not for everyone • Training in skills needed to live in a community housing cooperative, and cohousing community 	<ul style="list-style-type: none"> • Security of tenure • Affordability • Instant community • Housing that aided living sustainably 	<ul style="list-style-type: none"> • Substitution – the introduction of practice of interviews into a new situation of joining a community 	<ul style="list-style-type: none"> • Community building by encouraging (requiring) participation in the community organisation • Circulating competences and meanings with new members

7.3 Governing home and community

The following section will look at the bundles of practices illustrated in Figure 7-3. These are practices related to the ongoing governance and management of an intentional community, focusing on aspects of decision-making and visioning.

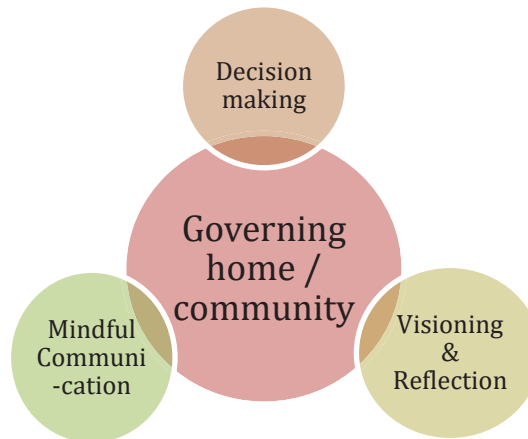


Figure 7-3: The practices of governing home and community discussed in this section

As a cohousing community that was also part of the Earth Co-op, which was part of the wider CEHL structure, the governance structure at Murundaka was complicated. Additional background is given in Appendix H.

Within the cohousing community, Murundaka used a governance model that is a modified version of sociocracy. Sociocracy means rule by the social group and is 'a governance system based on a pattern of inter-linked decision-making circles that each contains a small number of people' (Rios 2011, p.22). Policy and planning decisions are made by the whole community or a representative group of the whole community. Whole of community meetings are held once a month to make decisions affecting the whole group. Management of the community by its members is one of the principles of cohousing outlined by McCamant and Durrett (2011). It is one of the values that Murundaka has tried to instil in its governance structure.

The founders had made a conscious decision to let the whole Murundaka community collectively determine the basic governance structures of the community, the '*basic levels, and systems of committees and management and accountability, reporting and communication and delegation and stuff like that*'. Iain had over 40 years of experience working with community groups. However he determined that allowing the group to figure things out together was a key principle that the community should uphold. Iain described the complexities of the process:

it has been a long... a difficult task as we have been doing that because there's been varying degrees of people's enthusiasm. And some people don't want to take on responsibility but I've got to tell you most do and the incredible spontaneous things that take place here as well as the organised things that take place here, are a joy to behold (Iain, 6 years).

At the time of the research, there were ongoing discussions regarding how to ensure all members were participating, and contributing to, the operation of the community. Whilst the residents discussed the positive aspects of having an active role in community governance, it was clear that at different times many members felt the burden that regular participation in meetings, committees and working groups placed on their lives. Heidi stated that:

participation has been a really big topic and something that is very contested. And lots of expectations versus reality, stuff like that (Heidi, 6 years).

This was a common tension both at Bundagen and Murundaka. However, the regular meetings appeared to play an important role in maintaining social contact between members of the community who may not have been so regularly involved in other social events and communal gatherings. As was discussed in the previous chapter, the deliberative decision-making process provides an effective mechanism for sharing meanings among group members. Though meetings were not compulsory, there was a strong obligation amongst community members to attend a certain number. There was an ongoing discussion about how strictly to enforce these norms and how to encourage participation, as Giselle explained:

at our last AGM in December we were all given active membership agreement forms, and you have to say that you will agree to do, and you have to do something Have to do one out of this category, one out of that category, whatever. So maybe you have to be a director, or you have to be on a committee, or perhaps you attend the really regional Association meetings or... yeah so those kind of things (Giselle, 6 years).

Obligatory attendance at community meetings etc., appeared to have benefits in maintaining social ties within the community that were separate from their actual role in governance.

7.3.1 Governance and Decision-making

The decision-making circles described by sociocracy can be seen in the number of working groups or committees that look after various areas of the ongoing operation of the community. These groups meet separately to make ongoing operational decisions about issues relevant to their particular area. Groups at Murundaka include:

- Resource Utilisation Group (RUG),

- Garden Group,
- Common House working group
- Energy Independence Group
- Built Environment Review Group
- Finance group

All Murundaka Cohousing Community meetings, whether working groups or whole community meetings, use a consensus method for decision-making⁴⁹ (Murundaka Cohousing n.d.). Used in a cohousing context, the sociocracy model with consensus decision-making allows people to participate and make decisions about areas of community life that they have a particular interest or passion for. In Murundaka, this is driven by:

the idea that we all live here and feel empowered and we we're attached to the decisions being made... that's what we're trying to do (Chris, 6 years).

Any decisions that affect more than one working group, are long-term planning decisions or are contentious and cannot be reached on consensus are addressed in whole community meetings⁵⁰. Like at Bundagen, decision-making by consensus is seen as important for the proper functioning of the community, but also as an improvement on mainstream democracy, as Iain describes:

I think it's a real democracy because so much of democracy has been taken away from us. So many decisions are made for us by the bloody planners and the regulators who tell you what to do with your nature strip and your garbage and how you have to build your house and deny people the rights to actually construct their own lives in the elements of so-called safety, but really it's mostly... it's all about the elements of control and we want your money. It's another form of taxation (Iain, 6 years).

7.3.2 Visioning

Organised and regular time and space for visioning and reflection practices has been an important feature of community life at Murundaka. The group held a visioning weekend six months before moving into their apartments to create an overarching vision for the Murundaka Community.

we had it [a visioning] fully facilitated and did a whole day and produced a vision statement, which I reckon it's pretty good. Today. It seems to be just as robust today as it was (Giselle, 6 years).

Whilst not an everyday occurrence, visioning is an example of a practice that can have a significant impact on many other practices in the community. It can be particularly effective in circulating, and

⁴⁹ Meetings of Earth Co-op - for specific cooperative issues– use a simple majority.

⁵⁰ A brief introduction to sociocracy in a cohousing context can be found at <http://www.cohousing.org/node/2610>

to some degree aligning, elements of meaning amongst residents and guiding the overall direction of the community. The vision for Murundaka that was produced during this process was detailed in Section 4.4.3, and further details about the vision and the processes the community followed are described in Appendix H. The vision statement was displayed on the wall of the common house where it was visible to all residents and visitors to the community). The community made a conscious effort to ensure that its vision statement for the community was kept in the minds of the residents, and was seen as a living document to be regularly discussed.

We don't do newsletters all that often but for a while, and hopefully it will continue we would take a sentence out of the vision statement and put it into the front of the newsletter and sort of say, what does this mean in actuality? These are the words we said, but how do we activate these words and make them come alive? (Giselle, 6 years).

Along with the original vision, and the newsletters, the community has held regular retreats, and some mini-visioning events to continue to reflect on how the communal life is going, and evolve the vision.

As discussed previously (Section 6.3), visioning practices can be extremely important for community function, and in encouraging more sustainable everyday practices. Firstly, it acts as a deliberative process, where people openly discuss ideals and motivations for how they want to shape their lives. This brings many meanings into the discursive consciousness of the members, creating an opportunity to reflect upon values that are often unconscious or rarely examined. Secondly, the deliberative process can encourage pro-environmental goals, as these are ultimately in everyone's interest. The public creation of sustainability goals creates a public norm, or standard, against which the community members effectively agree to be measured against, and this seems like an effective tool for allowing people to 'intrude' into the inconspicuous everyday practices around the household that might otherwise be considered private and not questioned. Finally, the act of publicly discussing and case-making is a very effective means of sharing meanings amongst the group, starting the circulation of various practice elements from the beginning.

7.3.3 *Mindful communication*

A number of interviewees talked about the process of adjusting to living in a community, and making decisions in a more communal manner. Before the residents moved into the Murundaka development, social ties had begun to form around the ideas of the cohousing community. This process accelerated in the final year. Residents spoke of the adjustment when it came to actually living together and sharing space.

This points to an element of an intentional community such as Murundaka that is crucial for how communal living practices occur; the physical co-location of members in a space that is shared to some extent. This material element impacts on everyday practice in many ways, requiring constant negotiation and interaction between community members in a manner that is not required in communities which are not based around creating new lifestyles and living environments. The community had drawn on resources about cohousing and intentional community formation as the group was coming together, recognising the importance of learning from others. As mentioned previously, all Murundaka members undertook three training sessions about living in a housing cooperative from CEHL, as well as additional training specifically about living in a cohousing community.

Group members spoke knowledgeably about the process of community formation. For instance, Chris noted *'we're two and a half years into being on site and... we're already moving through lots of stages of a community quite quickly, so I think we're doing really well'* (Chris, 6 years). One of the practices that was spoken about within the community as being of particular significance was mindful or conscious communication.

Both Bundagen and Murundaka had dealt with conflicts within their communities. In both cases, there was a strong feeling of acceptance within the community that conflict was inevitable, and particularly common when trying to reach decisions in a communal manner. Therefore, there was an emphasis on gaining the skills to deal with conflict in a way that strengthened the community rather than weakened it. Murundaka worked with a mediator from early on, to help work through conflicts within the community. They trained the community members in mindful communication skills, and Giselle felt this had set-up the community well to deal with conflicts in the future.

...before we could really start to pull back the lid and have a look at what these issues were which, you know, seemed so scary, he basically got us in shape to do that with training in mindful communication skills. And people were learning in the mediation session, practising it in mediation session, maybe having a little go with some of the issues that were maybe more manageable (Giselle, 6 years).

...but our interpersonal... how we deal with each other in meetings like I think we're progressing really well as a community (Chris, 6 years).

One of the residents, who joined after the building was completed, introduced know-how from her experience with a therapeutic community in the form of a 'concerns and appreciations' time at the start of community meetings (Jo, 4 years). She also ran a workshop on mindful communication within the community.

The skills and competences the community members were acquiring from this mindful communication experience were transferred to other practices and practices in different contexts. Giselle mentioned one community member who had used mindful communication techniques to improve the relationship with an ex-partner. Heidi, who worked for a design and architectural firm, found she was using her experience within Murundaka in the commercial context, looking at how her firm could innovate, and do things differently in the future. She described:

unlearning the hard business skills and those methods of interacting in meetings and those kind of decision-making settings, and re-learning how to just connect more emotionally, and more meaningfully with people (Heidi, 6 years).

7.3.4 Summary

This section discussed a bundle of practices all related to the resident's self-management of their community, through decision making in community meetings, working groups, annual retreats and visioning sessions. As Iain reflected, resident governance required a lot of learning, but gained noticeable rewards:

Now we have to relearn a lot of those skills of how we collectively manage and sort that out and stuff like that, but the positive aspects of support... you know, when people I think have a commitment and loyalty and pull... gifting back to their neighbourhood is just enormous. Both in the environmental impact, both in the sense of social connectedness and friendship, compassion and support and of course in the affordability aspects (Iain, 6 years).

Similarly to the previous section, community governance practices are not necessarily directly linked with more sustainable consumption. Instead, they are distinct because of how they are performed by community members in the community setting, allowing the reflexive and ongoing intervention towards sustainable practices.

Governing home and community:

Community governance serves multiple functions within the community. When functioning well, it is a mechanism that helps the community to act as a cohesive unit on a larger scale, whether to influence local council policies or collectively fund a large rooftop solar installation. The regular meetings provide a means for the residents to respond to changing circumstances within the community in a reflexive manner (more so than a local council would be).

This can be useful in attempts to create more sustainable lifestyles at Murundaka, as interventions that are continuous and more reflexive to changing circumstances are likely to be more successful (Spurling et al. 2013). The decision-making process provides a forum for sharing meanings amongst

group members. The need for consensus to be reached encouraged public discussion and deliberation amongst the community. Whilst meetings were not compulsory, there was a strong obligation amongst community members to attend a certain number. This also appeared to play an important role in maintaining social contact between members of the community who were less regularly involved in other social events and communal gatherings. Other research has described the consensus decision-making process as the cornerstone for building social capital and trust amongst the community (Ruiu 2016).

Community visioning sessions:

The visioning process is one example of a practice that is often seen in cohousing projects but is unusual among apartment complexes. Murundaka, in particular, had tried to make visioning and reflection a regular practice within the community, by running annual retreats for all members and raising various sections of the vision for discussion in the monthly newsletter. Spaargaren and Van Vliet (2000) have suggested that bringing practices or elements of practice into discursive consciousness is a crucial step in creating pro-environmental change and one that should involve a social exploration of new alternatives at a group or community level (Jackson 2005b). The collective creation of an agreed upon community vision and values was an important way to achieve this, and spread meanings between 'carriers'.

This section has discussed practices that were significant in allowing Murundaka to function as a sustainable, intentional community, with meanings, competences and material elements that differentiate it from more mainstream communities. Table 7-3 provides a summary.

Table 7-3: Key practices and elements in the creation and ongoing governance of Murundaka Cohousing Community

Domain: Governing home and community					
Practices	Elements			Type of intervention into 'mainstream' practice (Spurling & McMeekin 2015)	Sustainability impact of practice (Seyfang 2009; Schanes, Giljum & Hertwich 2016)
	Materials	Competences	Meanings		
Decision Making	<ul style="list-style-type: none"> Communal facilities Signs and posters 	<ul style="list-style-type: none"> Use of modified version of sociocracy governance model Understanding of consensus decision making Conflict resolution skills Mindful communication skills Formal meeting procedures Delegation to committees 	<ul style="list-style-type: none"> Residents desire to manage their own lives People make decisions about things that affect them and they are passionate about Importance of working together as a community (some conflict with above) Everyone should have a voice – the value of 'real democracy' 	<ul style="list-style-type: none"> Substitution - Practice enacted at the level of the apartment complex – in a novel situation 	<ul style="list-style-type: none"> Community building – encouraging participation and building social networks and capital Collective action – enabling collaboration to make effective decisions about things that affect their lives and engage with local government and public policy Mechanism for circulating meanings and competences
Visioning & Reflection	<ul style="list-style-type: none"> Communal facilities for large groups Community newsletter Posters 	<ul style="list-style-type: none"> Use of 'open space' principles Formal visioning procedures and note taking Space and invitations for reflection on vision in the newsletter 	<ul style="list-style-type: none"> Importance of reflection Value in planning together Unlocking creativity and collective vision 	<ul style="list-style-type: none"> Substitution - Practice enacted at the level of the apartment complex – in a novel situation 	<ul style="list-style-type: none"> Community building – encouraging participants to share experience ideas, creating a participatory and inclusive community experience Collective action – encouraging participation in the Murundaka community – active citizenship Make explicit meanings of sustainable living Mechanism for circulating meanings and competences
Mindful Communication	<ul style="list-style-type: none"> 'My Community's communication' cards 	<ul style="list-style-type: none"> Conflict resolution skills Non-violent communication 	<ul style="list-style-type: none"> Acceptance of conflict 	<ul style="list-style-type: none"> Recrafting of existing communication practices within new elements 	<ul style="list-style-type: none"> Community building – encouraging participation and building social networks and capital

7.4 Dwelling the house

This section will focus on the practices of dwelling the house that Murundaka residents discussed as contributing to their everyday sustainability. These are outlined in Figure 7-4. Cooking, which could also be considered within this domain, is discussed in a separate section on food-related practices.

Although not to the same extent as Bundagen residents, Murundaka residents also saw energy provision as an integral part of household practices, particularly in relation to their perceptions of sustainability; so energy provisioning is discussed as a practice related to dwelling in the home.

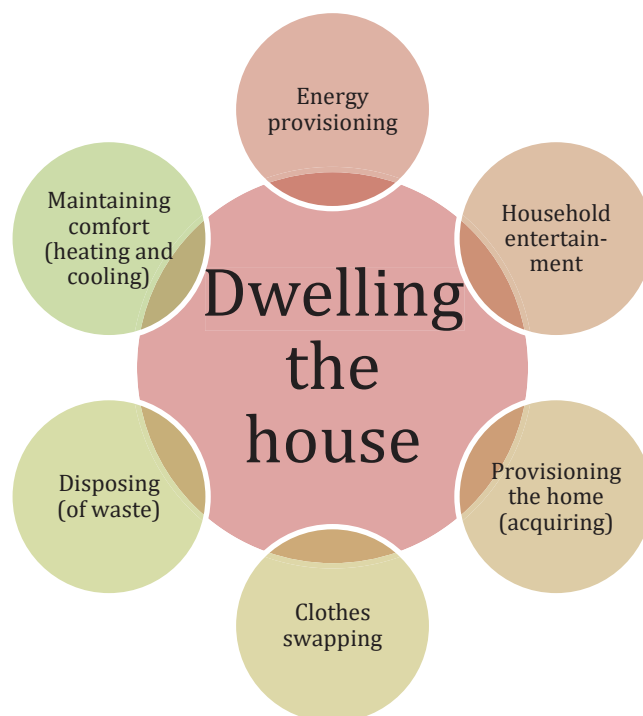


Figure 7-4: Practices of dwelling the house discussed within this section

7.4.1 Energy Provisioning

Energy provisioning was an evolving practice at Murundaka. At the time of construction, and later at the time of the primary site visit for this research project in 2014, it was connected to all utility networks (electricity, gas, water and sewage). The suburban location made electricity and gas connections an easy option to take for the development. However, with sustainability as a core community value, the community was conscious of the source of their energy and had aspirations to improve the sustainability of their power supply. During interviews in 2014, some of the members mentioned that they had agreed with CEHL to be supplied with 100% Green Power (sourced from renewables) at Murundaka, but had recently found out that the agreement hadn't been acted upon. Giselle said the community planned to become energy independent, but that was seen as a long-

term project for 5 – 10 years after moving in. Finding out that their electricity was not coming from renewable sources had *'pushed it [energy independence] right up to the top of the list'* (Giselle, 6 years).

Motivating the pursuit of energy independence was a desire to reduce the environmental impact of the energy consumption of the community. Therefore, a number of residents were unhappy about the lack of renewable energy in the existing grid-connected arrangement. At the time of the primary site visit, they were working with a consultant (Energy for the People) to develop a plan to become energy independent. This was known as the Energy Freedom project, and an energy independence working group was established within the community to drive the plan. The goals expressed by Murundaka residents were to:

1. Reduce energy use across all properties,
2. Reduce the cost of our energy bills and,
3. Switch to 100% renewable energy (Murundaka Cohousing 2016)

Some members of the energy independence working group undertook an energy audit of all the apartments and the common house. One of the members had previously worked as an energy auditor and so was able to share her knowledge of the auditing process to facilitate the data collection. The data collected during the audit was shared with Energy for the People. The energy audit found that electricity usage within Murundaka was very low, 60% less than the average of nearby households. The average electricity consumption per household unit at Murundaka was approximately 5 kWh/day including common facilities. The average usage for a 2-person household in Heidelberg Heights (the surrounding suburb) was 13.1 kWh/day (Foyster 2014b).

The recommended first steps from the audit were that Murundaka installed an Energy Management System and change to LED lighting, with upgrades resulting in:

- A 25% reduction in energy usage,
- Reduction in bills by 50%.

In late 2015 the community also installed a 17kW grid-connected solar photovoltaic system. So while not technically independent, they now produce the equivalent of 100% of the community's electricity needs with the solar panels. They held a Solar Festival Fundraiser and invested co-op funds from their long-term maintenance savings to pay for the project (Heidi 2017, pers. comms., 20 June). The installed solar panels on the roof were a very explicit material manifestation of a commitment to energy independence.

Putting all this into practice required a variety of competences such as energy auditing knowledge, community event organisation know-how, along with the competence to work within the existing

organisational framework of both Murundaka and CEHL. By acting on a community scale, within the framework of the energy independence group, the energy provisioning practices were changed by drawing on competences from different people at different times. So Jude could draw on her background as an energy auditor and perform audits with Greg acting as a willing assistant. Heidi could draw on her professional experience, as well as technical skills of others within the community, to work with the energy consultant and make a case for installing solar panels that would be approved by CEHL. In this way, the 3-4 people in the energy independence working group could pool competences in a way that impacted all 18 households in the community. As part of the ongoing plans, Jude discussed wanting to run a workshop within the community on reducing power consumption to share competences with more of the residents.

The community is planning other practical measures to improve their environmental impact. On the community website, they now say they are planning to replace all gas cooking and hot water boilers with electric so they can be fossil free. Other future plans include community owned and shared electric vehicles and battery power storage.

7.4.2 Provisioning the home (acquiring)

For many Murundaka residents, a major material difference in household practices was the greater emphasis the cohousing community placed on shared space and goods. This can be seen as partly deriving from meanings that many residents held, and partially inscribed by the physical design and layout of the community based on cohousing design principles. As outlined more fully in the previous section, the physical design of the community emphasised shared spaces such as the common kitchen and laundry, with residents living in smaller than usual apartment spaces (Figure 7-5 shows the living area of the common house). This, in turn, influenced the types and quantity of household goods that were acquired by community members, as many things are shared within the community.



Figure 7-5: The living area of Murundaka's common house from the mezzanine level library (Photo: Anne Garland)

For instance, the common laundry space contains four washing machines that service all 18 apartments; there are two shared vacuum cleaners, one barbecue, as well as two lawnmowers for Murundaka and the two additional households in Heidelberg Heights.

Heidi listed many kitchen items that her household did not own, and had not owned, but were now available in the communal kitchen:

now we have access to a lot more of that stuff. So... It's silly things... a food processor... a hand blender... Yeah, love the food processor. Using coffee machines, you know we co-own a car, and we are part of a car share scheme now... we don't own a microwave, we don't own a toaster, we don't own a juicer... I'm just looking around the kitchen now (Heidi, 6 years).

A number of large entertainment items are available in the common living room (pool table, piano) and library (large screen TV) that would not have been able to fit into many of the units. The physical sharing of goods and having access to them without having to own them was described as 'the biggest way that this place [Murundaka] enables us to live a lower impact life' (Chris, 6 years), as well as a way of (potentially) improving wellbeing:

If quality of life is measured by your access to material things, so our quality of life in that measure has gone up (Heidi, 6 years).

The idea of prioritising access over ownership, and valuing sharing, was a key meaning influencing many practices within the community, including acquiring new goods. There was a complex mix of ideas that related to this, with strands of anti-consumerist sentiment, a desire to reduce consumption as well as save money. Sharing was a key part of community life, as Jude explained:

Yeah that is another thing. And that is what, I think that is what community is really about, and that is what the true essence of communities used to be about, the way people are naturally meant to live, I think is about sharing, or using common resources. (Jude, 6 years).

Trust of other community members was a key in facilitating the sharing. Jude, for instance, spoke of sharing things (a car) within the community that she would never have thought of doing previously, because of a protectiveness of her possessions. She had found her outlook changing since moving into Murundaka; *'But being here and seeing how generous people are, I have been able to reciprocate. Yeah.'* (Jude, 6 years). This is an example of how meanings about sharing evolved. It is also perhaps an example of accessing new competences that enable sharing, such as how to negotiate particular sharing arrangements, skills and avenues for conflict resolution that can enhance feelings of trust. For instance, Chris described the biggest change he had noticed about himself while living at Murundaka was:

how I interact with people and personal relationships and being here you know you are with people so much and we're talking and we're working through issues and we're learning how to be facilitators and all that kinda thing and that has definitely, that has been the biggest change from pre-Murundaka Chris to post-Murundaka Chris (Chris, 6 years).

Some residents at Murundaka held strong meanings of reducing consumption. Giselle outlined her vision of increasing control of her time, by becoming less of a consumer, reducing personal consumption and also saving money:

So you want more time, so how to liberate my time? Have less work demands. How to have less work demands? Have less consumer demands... so in the end you find that actually your needs are being met well, see you actually don't need to be consuming so much. And then you can let go of some of the income generation, and then you've got more time, and you can do more in the community, and it is a self-perpetuating thing (Giselle, 6 years).

Heidi had previously gone a whole year when she bought nothing new. She typically bought second-hand clothing and remembers buying new clothes only once in recent years.

There appeared to be an active discussion about how the community understood acquiring goods for both personal and community use. Buying nothing new for a year could be seen as extreme, but could also introduce a new meaning about personal consumption that influences the shared understandings of acquisition within the community. Examples were mentioned of people buying things for the community that others didn't consider necessary; new sheets and blankets for the guest rooms for example, when others thought that second-hand would have been more appropriate. Given the shared spaces within the community that are jointly managed, the practice of household provisioning becomes a more public practice, and more open to community discussion. This can be an effective mechanism for circulating meanings and perhaps competences. As Giselle describes:

well partly it's just by osmosis, just by observation and just little random comments here and there, like, you know just in the kitchen pulling out the drawer and there's cling wrap there, or something. And then it just only takes one person to go 'why are we buying these single-use products for? Can't we do this a different way?' (Giselle, 6 years).

Giselle mentioned a plan to develop a purchasing policy that could be used to guide provisioning decisions, particularly for communal goods. That process would present another opportunity where meanings could influence purchasing practices to be shared throughout the community, as well as competences, for instance about where to acquire second-hand goods.

7.4.3 Clothes swapping

A specific example of a common, formalised practice at Murundaka that relates to the acquisition of goods was the community clothes swap. This was called the 'open closet', a wardrobe located in the common laundry where residents put unwanted but usable clothes, and other residents could take whatever they liked. Garments would be left in the open closet for a month, and if no-one took them, they would be then sent to a charity clothing store in the local area. This practice means fewer clothes are bought and extends the lifespan of clothing that has already been purchased. The material element of this practice is the space provided for the open closet, as well as the unwanted clothing deposited by residents. Having the space and infrastructure in place is an important enabler for the practice, as was the location of the open closet. Locating it in the laundry guaranteed a continual stream of residents would see the garments, making it easy for them to incorporate clothes swapping into their regular routines. As Giselle confirmed, the meanings driving the practice are multiple, including a desire to reuse goods, save money, the idea that 'one person's trash is another's treasure', as well as the idea that a desire for novelty is often the driver of consumption:

That's correct; it's variety. And a lot of consumerism is around about, is about meeting that need for the new, novelty and variety. So getting that need met doesn't have to be through new things... (Giselle, 6 years).

The users of the open closet have an understanding or knowledge that they can satisfy that desire for novelty and variety through swapped clothes, and the knowledge of what clothes are appropriate for swapping, and how to use it to find clothes.

7.4.4 Disposing

Reducing the quantity of waste thrown out was an aspiration for Murundaka from the design stages, as reducing the environmental impact of the residents was one of the symbolic meanings for the community. Giselle said that the community is aiming to be 'zero waste by 2020'. Since the residents moved in, other shared meanings, such as the desire to reuse goods and materials, and the idea of trash as someone else's treasure, or waste as a resource, have been integrated into the community's waste disposal practices. Giselle described the way the community considered waste as one of their best initiatives:

I think the whole thing about resources, moving us from thinking about waste into looking at things as resources, challenging ourselves to get a grip on our waste streams, and save stuff from the waste streams - both landfill and recycling (Giselle, 6 years).

During the development approvals process the community negotiated with Banyule Council to provide them with fewer than the standard number of landfill bins, only receiving four for the entire development, locking in a material element of the waste minimisation aspiration. A small, unused pump room has been repurposed as the Resource Utilisation Group (RUG) room for the collection and sorting of waste. Kitchen scraps are eaten by chickens or placed in compost bins in the garden. The RUG room was an initiative that many members of the community were eager to discuss, described by Giselle as 'one of the jewels in our crown really. Because it does set us apart from pretty much anyone else I know'. The RUG room presented an example of how working together on a community scale could change everyday practices, using what some residents referred to as the 'power of collection'. They found that 'when you get enough things together that have got a similarity, they get a different value' (Giselle, 6 years). When everyone has a couple of egg cartons, wine bottles or passata jars in their home, they seem like rubbish, but 'once you see a box of them in there [in the RUG room], you think, I could do something with that' (Heidi, 6 years). There are a number of examples: the community collected wine bottles to send to a group building an Earthship House; egg cartons were collected to take to the Asylum Seekers Resource Centre. The provision of space

for collection to occur and the community scale of waste / resource collection allowed different meanings to be expressed around (previous) waste disposal practices.

Know-how for appropriate waste disposal has developed as the community has matured, with more community members having an understanding of what materials can be recycled, reused, composted, fed to chickens or disposed of. This know-how has been shared throughout the community in a variety of ways: through emails and signage and through private conversations and knowledge sharing. Sophie, for instance, credited Heidi with giving her the idea that she could:

recycle so much more than I used to, I used to just have a bin and a recycle bin and ... but now we've got 5 different bins, spares for separating all our waste (Sophie, 4 years).

The public leadership of some members also acted as a means of circulating knowledge, as well as reinforcing the social and symbolic significance of appropriate waste disposal.

Like if I do see polystyrene going into a landfill bin I will pull it out, put it into the RUG room and yeah. Sometimes I do that. For a while there... the wrong things were going into recycling bins... And I was consciously pulling things out, like getting into the bins... to pull out things that didn't belong there. And people saw that (Giselle, 6 years).

The bins were located next to the walkway between the east-wing and the common house, which was quite a visible location. Seeing Giselle climbing into bins to fix mistakes that others made when sorting the waste conveys how important properly disposing of waste is to her. This is a trigger for other community members to reflect on their own actions, and serves to reinforce particular community values around proper disposal of resources.

Community members spoke about wanting to get people from both inside, and outside of Murundaka to reduce their level of waste disposal. The community was tracking the number of bins used each week by the community, and for a while was sharing the information on the community noticeboard. They had formed an unofficial reference group with researchers from the University of Melbourne and people from the local council (Banyule) to share their bin usage statistics with and discuss ways to do more. This presents an example of how some of the expectations and meanings around waste disposal can spread from within the community to a wider pool of potential carriers.

7.4.5 *Maintaining comfort (heating and cooling the home)*

The Murundaka residents discussed a couple of heating and cooling practices during discussions about the contribution of Murundaka to their personal sustainability. Only the top floor apartments

have air conditioning. All apartments have gas connections, with each household choosing whether to use a heater.

Jude described how her heating practices had evolved since moving to Murundaka. She had a background in environmental science and energy auditing and described herself as someone who was always *'on the ball'* when it came to conserving energy. So she already possessed many of the competences to perform low-consumption heating practices. However, she still found that *'since moving in here I have been particularly careful with, say, my heating. So I've become more conservative I think with energy'* (Jude, 6 years). She would do all the *'sustainable things'*, such as having her *'sleeping bag on the sofa, drink tea and wear socks in bed'*. It seems that since moving to Murundaka, she had found additional motivation (meaning) to do the *'sustainable thing'* with her heating practices. Jude wasn't the only person to pursue low-consumption heating practices: Giselle spoke of an apartment that turned the gas off in their place completely, describing it as one of the *'amazing things that people have done'* (Giselle, 6 years).

A number of residents mentioned their experience of the previous summer when there was a heat wave in Melbourne - Jude remembered five days with temperatures over 42°C. On the really hot days, the community congregated in the common house. They had:

a little indoor pool and the kids were like playing around in the indoor pool... And then adults sitting there with their feet in there. We were running the evaporative cooler in here instead of running the fans and air conditioning in the apartments. And eating in here together, you know, like the one person making one salad or two salads for us instead of each person spending all that energy... (Heidi, 6 years).

In this instance, the shared space and the social dynamic of the community provoked a unique response to the heat wave. It was similar in a way to going to the shopping mall or local community hall, except it was located so close to all the households. The use of the common house in this way is similar to the idea of a cool retreat, or *'summer room'* which is receiving growing attention amongst Australian built environment researchers (Saman et al. 2013). The cool retreat combines material and behavioural adaptations with the aim of reducing AC energy consumption by encouraging occupants to cool a small zone of their living space and spend their time there during heat waves. The large size of the Murundaka common house may negate most of the energy savings from this approach, but it indicates the acceptability of this adaptive idea to the community members.

Jo spoke about her thoughts on her own cooling practices in a way that seemed to mirror what Jude discussed regarding heating. She would discuss air conditioning usage with others in the community

which provided an additional meaning (competitiveness and/or establishing a shared general understanding of appropriate cooling practice performance) to lower her household cooling energy consumption.

...last summer... I was like no I haven't used my air-con yet I'm vowing never to do it, and then I heard a few other people had used theirs and I was like, shit maybe I should. [I thought] no I wanna go the whole summer without using it. I used it for like 4 hours on one day but yeah it was maybe a bit competitive or yeah just sort of talking about those things [with others] (Jo, 4 years).

In this instance, the knowledge that others in the community had already used their air conditioners caused Jo to question her commitment not to use hers. This illustrates the fact that shared social interactions within Murundaka do not always encourage environmentally positive actions per se. However, it is an indication of the discussions that occur, showing that things such as air conditioner usage are part of the discursive consciousness of community members. For many of the residents interviewed, these discussions took place within the wider context of the community goals of reducing energy consumption. Interestingly, Jo decided to pursue her goal of not using the air conditioner. The fact that 'sustainable practices' are encouraged by others within the community (for example, supported by the community vision, and seen by Giselle lauding people for cutting off the gas connection) could be expected to have played a role in keeping meanings of sustainability at the forefront of Jo's cooling practices. A similar dynamic is likely to have contributed to Jude becoming even more aware of energy conservation since moving into Murundaka.

7.4.6 Summary

This section has discussed practices that Murundaka community members felt reflected aspects of living a more sustainable lifestyle, and that many, if not all, households were performing. Table 7-4 provides a summary. Of all these practices, two stood out as being both unusual practice innovations in a household context, and with significance for environmentally sustainable consumption: the alternative waste disposal practices related to the use of the RUG room, and the community clothes swapping practice. The following section will discuss practices associated with another significant area of resource consumption within the household – food.

Table 7-4: Key practices and elements in the practices of dwelling the house within Murundaka Cohousing Community

Domain: Dwelling the house						
Practices	Elements			Type of intervention into 'mainstream' practice (Spurling & McMeekin 2015)	Sustainability impact of practice (Schanes, Giljum & Hertwich 2016; Seyfang 2009)	
	Materials	Competences	Meanings			
Energy provisioning	<ul style="list-style-type: none"> • Roof space for solar • Weight of numbers / buying power 	<ul style="list-style-type: none"> • Energy auditing knowledge • Ability to act as a group (power of scale) 	<ul style="list-style-type: none"> • Desire for energy independence • Reduce environmental impact 	<ul style="list-style-type: none"> • Substituting of practice (although grid-connected rooftop solar is becoming mainstream) 	<ul style="list-style-type: none"> • Establishing an alternative system of distributed renewable energy production • Reducing ecological footprint - net • Average Australian can save 2.2 tCO₂e per year by purchasing green power (Wynes & Nicholas 2017) 	
Provisioning the home (acquiring)	<ul style="list-style-type: none"> • Common kitchen and kitchen equipment • Common laundry and equipment • Shared library • Shared entertainment equipment (large screen TV, pool table, piano) 	<ul style="list-style-type: none"> • Systems for sharing goods • Bulk buying for discounts/less packaging • Community procurement guidelines (codified knowledge) 	<ul style="list-style-type: none"> • Access, not ownership can increase quality of life efficiently • Reduce consumption • Reuse valued for environmental and economic reasons • Second hand is ok • Anti-consumerist sentiments 	<ul style="list-style-type: none"> • Recrafting of elements 	<ul style="list-style-type: none"> • Direct reduction through consumption reduction • Indirect reduction through changes in consumption patterns – greater reuse • Indirect reduction – changes in using behaviour – greater sharing of goods • Reduction in embodied energy / Lifecycle emissions intensity of acquired goods 	
Clothes swapping	<ul style="list-style-type: none"> • Permanent open closet clothing exchange space • Unwanted clothes 	<ul style="list-style-type: none"> • Browse clothes while doing laundry • Know swapped clothes can satisfy the desire for novelty 	<ul style="list-style-type: none"> • Reuse valued for environmental and economic reasons • Novelty as a driver of consumption • Trash as treasure 	<ul style="list-style-type: none"> • Substitution of new practice 	<ul style="list-style-type: none"> • Indirect reduction - through changes in disposal patterns by donating 	

Domain: Dwelling the house						
Practices	Elements			Type of intervention into 'mainstream' practice (Spurling & McMeekin 2015)	Sustainability impact of practice (Schanes, Giljum & Hertwich 2016; Seyfang 2009)	
	Materials	Competences	Meanings			
Disposing of waste	<ul style="list-style-type: none"> • Restricted number of council bins • Waste (Resource) collection and sorting room (RUG room) • Chickens & Compost bins 	<ul style="list-style-type: none"> • Collect waste in RUG room • Bin audits to understand and measure waste stream • Composting knowledge • Knowledge of hierarchy of best ways of reusing / disposing of waste 	<ul style="list-style-type: none"> • Trash as treasure and the power of a collection (of jars etc.) to become a resource • Reuse • Reduced environmental impact 	<ul style="list-style-type: none"> • Recrafting of all practice elements 	<ul style="list-style-type: none"> • Indirect reduction - through changes in disposal patterns by donating • Indirect reduction - through changes in disposal patterns by managing waste disposal more efficiently • Indirect improvement – change disposal behaviour – food waste collected for composting 	
Heating and cooling the home	<ul style="list-style-type: none"> • AC only in top floor dwellings • Shared common spaces 	<ul style="list-style-type: none"> • Knowledge of link between energy consumption and environmental impact • Know how to dress appropriately for the weather 	<ul style="list-style-type: none"> • Desire to reduce energy usage • Desire to minimise environmental impact 	<ul style="list-style-type: none"> • Recrafting of elements 	<ul style="list-style-type: none"> • Direct reduction - through curtailment of use 	

7.5 Food provisioning

This section explores the practices within the domain of food provisioning and consumption that emerged as the most important for household environmental sustainability (Figure 7-6). As discussed in the previous chapter, this is a significant domain when considering environmental impact, due to the large influence of food production and consumption on ecological footprint.

Two of the Murundaka Sustainability Goals have a direct impact, or have the potential to have a direct impact, on the food provisioning practices within the community. Their stated goals are

- To develop and keep our gardens and open spaces for recreation and food production
- To be mindful of sourcing of food and other goods locally and to utilize cooperative purchasing

These influence the material availability of space available for food production, as well as codifying certain meanings as important in the sourcing of food.

Similarly to Bundagen, the residents of Murundaka considered food provisioning practices – growing food and shopping for food - as important for living a sustainable lifestyle. The cooking and eating of food with friends (in this case the community) was another practice listed by Spaargaren (2011) as relevant to the governance of sustainable consumption, regarding food, that was uniquely integrated into everyday life within the cohousing community. It is discussed below, as communal dining, along with the previously mentioned food provisioning practices.

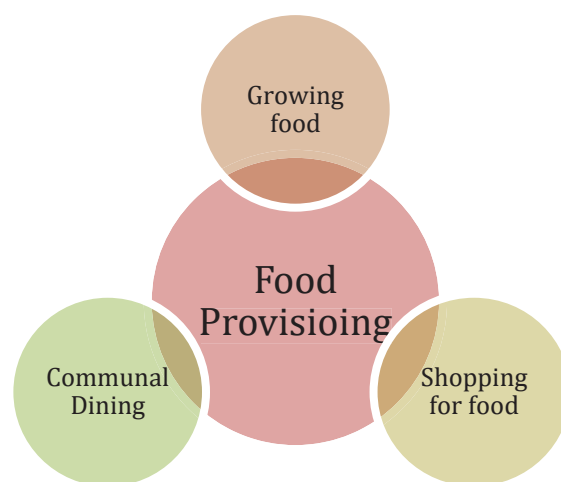


Figure 7-6: Food provisioning practices to be discussed in this section

7.5.1 Growing food



Figure 7-7: Garden space at Murundaka with compost bins in the foreground

Most residents discussed gardening as an important practice for personal sustainability. A communal vegetable garden and chicken coop took up a large proportion of the backyard area (See Figure 7-7). One of the community's initial ambitions was to produce 10% of their food on-site. Lots of residents talked of using the garden to supplement parts of their meals, and mostly for common meals, though they didn't think they were reaching the 10% target. There were a number of residents who were *'really passionate about growing your [their] own food'* (Mikoto, 6 years), with different meanings contributing to this passion. Some were concerned by food security and increasing self-sufficiency, others focused on personal responsibility for their food supply chain, or a desire for locally grown, organic food. Some residents had started rearing chickens, for example, to provide a source of meat grown on-site. There was talk of doing the same with rabbits, as Chris described:

we've also started experimenting, you know myself and another guy here, with producing meat chickens on site as well, so having those and we still have to kind of go through that process with the community (Chris, 6 years).

Some members were committed vegetarians who were *'totally against harming animals'* whilst *'at the other end of the spectrum you have very dedicated meat eaters who believe it's a really important part of their life and their habits to eat meat'* (Chris, 6 years). This was described as the *'biggest, most contentious issue in the community'* (Giselle, 6 years) and generated much debate.

This 'bitter, divisive' issue, was however discussed at length in community meetings. This provides an example of how the community governance process can create opportunities for the residents to reflect on the meanings central to their daily lives, by debating and ultimately deciding upon a community position regarding raising animals for meat.

Other meanings expressed by residents were less divisive:

I'm really passionate about the composting system and getting that really happening well and giving the earth more... just making it really fertile... (Jo, 4 years).

This leads to a consideration of the material elements involved in the gardening practices. Many relate to the way that the consolidated sharing of space by the community allowed food to be grown on a larger scale. A large area in the communal backyard was dedicated to gardening, with vegetable plots, compost bins, a chicken run, and six rainwater tanks. Both Mikoto and Jo discussed how much they appreciated the large garden space, compared with previous experience in smaller share-house gardens, or even growing plants in pots. The community was able to share resources used for gardening, such as tools (e.g. secateurs, spades, pitchforks, wheelbarrows). It also had the labour of a large group of willing gardeners, with the garden group having between 5 and 10 members (estimates varied). The garden group met roughly monthly for working bees. For Mikoto, having others to share the work was empowering, enabling different types of practice:

Anyway so here, you know, we can share the work. And things that I cannot do on my own I can do (Mikoto, 6 years).

Mikoto had clearly taken a leading role with food growing practices at Murundaka. She was very knowledgeable about permaculture, and along with another resident, John, had completed formal training. The gardening experience of other Murundaka residents varied, some had been growing their own small gardens for a long time, whilst some just enjoyed gardening and were happy to contribute labour and learn from others. Competence and know-how were unequally spread throughout the community. Yet by gardening communally everyone was able to benefit from a garden that used the permaculture competences of Mikoto and John. Mikoto had also used the space of Murundaka to host a large variety of workshops, as well as hosting a visit from Roberto Perez, a well-known Cuban permaculture expert. The workshops, as well as the monthly gardening group working bees, provided opportunities for personal engagement and learning-by-doing through participation, and appears to be an important mechanism for the spread of know-how within the community.

7.5.2 Shopping for food

The Murundaka sustainability policy named cooperative purchasing and the local sourcing of foods and other goods as ideals of the community. Most food shopping was still done by the individual households (not as a community), but the residents discussed ways that these ideals were being implemented in practice during the interviews.

So in terms of the local community, we live sustainable by most... many of the people going to the local market at Latrobe, which has got organic food. It's a perfectly good market. It's about a 10 minute bike ride away (Giselle, 6 years).

The practice of growing food was discussed above. The community was only aiming to produce 10% of food on site, so homegrown produce only made up a small proportion of most people's diets, though some, like Mikoto, were sourcing more than that from the garden:

some people, if they want to cook something for tonight they look at the menu and they say go to the supermarket and buy this this this. But for me, I just cook from the garden (Mikoto, 6 years).

Murundaka acted as a hub for the Eaterprise Community Supported Agriculture (CSA) seasonal organic vegetable box scheme, which used both the cooperative purchasing ability of the community and acted as a way to support locally based farmers. The common house provided a large space for the collection of the boxes, not just by Murundaka residents but also by people from the surrounding community:

So because here we have got 40 people. If I am on my own nobody is going to bring one box but because we have 40 people we have an advantage. We have a big buying power. It means that maybe 10 people want to order, so farmers are happy to deliver direct to here. And they are not just people here, we are part of a transition group here. So we can send an email out and people can pick up from here. So this one is like a hub (Mikoto, 6 years).

The CSA scheme was inactive at the time of interviews as it was the wrong season for harvesting. The community was still operating a small 'shop' for local produce, primarily acting as the 'drop off point for the honey guy' (Heidi, 6 years). Murundaka also functioned as a collection point for the Home Harvest Feast 2014. An initiative to encourage backyard vegetable gardening, it involves combining garden produce from many households in the region and cooking a large feast at the end of the summer.

Jo claimed that a preference for local and organic food was common amongst most people at Murundaka 'so most of us I would say buy the majority of food, [it] would be organic and local, we all sort of have that in common' (Jo, 4 years). Whilst organic food was a preference, there were

discussions in the community about issues of affordability and elitism around the higher cost of organics. Sophie had begun eating more organic produce since moving to Murundaka, and reflected on how the meanings that were given priority in the food sourcing practices of her and her partner, Greg, had changed:

I found that things happen naturally just by being around people, it wasn't someone preaching to me that I should live my life a certain way, just by being around people, it all became organic... and now Greg and I are prioritising eating organic over eating cheaply which we used to always just prioritise eating cheaply (Sophie, 4 years).

In this instance, the different meanings and social norms on eating environmentally friendly produce rather than cheap produce had become incorporated into their practices. The practice of communal dining, which provides an excellent process for circulating and sharing different elements of meaning and competence, will be discussed next.

7.5.3 Communal dining

The practice of communal dining, both cooking together and eating together, was mentioned by community members as a practice that helped social sustainability. It provided an opportunity to strengthen social bonds within the community, and reduced individual housework loads, allowing people to spend additional time on social interactions. At the time of the primary site visit there were no regularly scheduled common meals. Delphine said she and two others often cooked for the community on Monday nights, trying to make use of as much garden produce as they could. However, this meant communal meals generally relied on a couple of people being available or otherwise were organised spontaneously with only short notice⁵¹. The community was in the process of putting in place a participation policy, including a section on 'regular and equitable meals' (Giselle, 6 years). Part of that policy said that 'each member will commit to being part of a cook team once a month' (Giselle, 6 years), as well as joining one other meal a month solely as a diner. This policy aimed to reinforce that community members had a responsibility to contribute and take part in these social interactions. The regular and equitable meals policy would mean that Murundaka would have a minimum of 6 communal meals a month (based on 21 active adults with 3-4 helping out with preparation, cooking and cleaning per meal) that could be planned over a longer period and allow friends, family and even potential applicants to be invited to join meals occasionally.

Communal dining used the common spaces, particularly the kitchen and dining area, as well as the shared kitchen resources. The kitchen was designed and equipped to a commercial standard, so the

⁵¹ Two were held in the 5 nights of my primary site visit, with roughly ten people attending each one, including some people bringing their own left-overs to eat in the common room.

residents had access to a wide range of equipment, e.g. food processors, coffee machines, microwaves. The positioning of the communal building was designed to encourage spontaneous communal gatherings, as residents coming home from work could see activity in the communal space and decide to join. Sometimes this meant people would bring meals they had already prepared down to the common area if they saw there was a gathering. The meanings behind the practice of communal dining included using communal eating to stimulate social interaction and build community, as well as reduce individual time spent cooking by sharing as a group. Being able to cook for large groups requires a specific skill and some residents were better at it than others. Jobs were allocated by 'head cooks' so all could participate in cooking, and through this process others, like Heidi, were able to learn how to cook for large groups:

[Now] I know how to pit olives without using a thing, you know a little machine. I know how to make beer, I know how to make preserves and stuff, and I learnt how to cook for, I can comfortably cook breakfast for 20 people no worries (Heidi, 6 years).

The communal dining and kitchen space encouraged the bulk buying of some foods and commonly made use of produce from the garden.

It also acted as a regular setting in which the community members could share the performance of everyday practices like preparing, cooking, eating and cleaning up after a meal. This presented a valuable time for exposing community members to different ways of doing, that could allow them to reflect on their own practice performances and the sharing of different competences and meanings within the community. The example of a resident questioning the purchase of single-use cling wrap in the communal kitchen was previously mentioned as one way that different ideas of appropriate purchasing can spread. The communal cooking and dining experience provides the setting in which such exchanges can happen in a natural way.

7.5.4 Summary

The Murundaka residents keenly discussed food provisioning practices, and growing their own food, in particular. This reflected a bundle of practices that residents found important for living a more sustainable lifestyle. As previously discussed, growing food directly competes with food shopping for the 'role' of providing the food for household meals. Food grown in the garden doesn't need to be bought, and when grown organically is likely to represent a more environmentally beneficial form of production. The scale of food production at Murundaka was smaller than in Bundagen. However, it more clearly represented an intervention by the community to encourage growing food rather than buying it. A community goal was set to achieve 10% of food consumption from the garden. The gardening itself was a more communal practice: roughly a quarter of community

members participated in an official gardening group. Workshops were also held in the garden to create systems (e.g. composting) that would support food growing.

Table 7-5 summarises the preceding section, describes the type of innovation or intervention occurring within the practice, and the sustainability significance of that practice.

Table 7-5: Key practices and elements in the provision of food in Murundaka Cohousing Community

Domain: Food provisioning					
Practices	Elements			Type of intervention into 'mainstream' practice (Spurling & McMeekin 2015)	Sustainability impact of practice (Schanes, Giljum & Hertwich 2016; Seyfang 2009)
	Materials	Competences	Meanings		
Growing food	<ul style="list-style-type: none"> • Large communal backyard dedicated to garden • Shared gardening equipment & tools • Pool of willing labour • Plentiful compost • Rainwater tanks 	<ul style="list-style-type: none"> • Permaculture, gardening and composting knowledge • Cooking of seasonal vegetables • Preserving of excess food 	<ul style="list-style-type: none"> • Self-sufficiency and personal responsibility (grow own food) • Local, organic food is desirable 	<ul style="list-style-type: none"> • Recrafting of elements of growing food to increase the scale. • Substitution of growing own food instead of buying food from existing networks 	<ul style="list-style-type: none"> • Building new infrastructures of provision – through alternative food supply chains • Localisation – increasing self-reliance, reducing supply chain length • Reducing ecological footprint of consumption • Indirect reduction – growing your own food - Home-grown produce reduces transportation requirements (both distribution and personal shopping) • Direct improvement – more efficiently produced food - Organic agriculture delivers benefits, e.g. reduces non-renewable energy use by lowering agrochemical needs
Shopping for food	<ul style="list-style-type: none"> • Large communal space • Communal spaces (commercial kitchen, dining area, pantry, fridge, freezer) • Proximity to sources of local / organic foods (e.g. markets) 	<ul style="list-style-type: none"> • Skills to coordinate local CSA food box • Networking with local farmers and food groups 	<ul style="list-style-type: none"> • Local, organic food is desirable • Prioritising environmentally beneficial behaviour • Support for vegan / vegetarian diets 	<ul style="list-style-type: none"> • Recrafting of elements of cooking practices with more sustainable materials • Recrafting of meanings driving food purchasing practices 	<ul style="list-style-type: none"> • Building new infrastructures of provision – through alternative food supply chains • Localisation – increasing self-reliance, reducing supply chain length, supporting CSA • Direct improvement – more efficiently produced food - Organic agriculture delivers benefits
Communal Dining	<ul style="list-style-type: none"> • Communal spaces (commercial kitchen, dining area, pantry, fridge, freezer) • Building design, so that common area is visible as people arrive home • Shared bulk dry foods • Vegan food only benches in the communal kitchen 	<ul style="list-style-type: none"> • Community participation policy • Learning skills from people • Can check if people in the kitchen when arriving home from work 	<ul style="list-style-type: none"> • Social interaction • Build community • Save money • Spend less time cooking by sharing 	<ul style="list-style-type: none"> • Changing how practice interlink by synchronising cooking / eating and socialising practices • Also substituting cooking communal meal for preparing a number of own household meals 	<ul style="list-style-type: none"> • Community building – building social capital and trust through shared experiences • Indirect reduction – changing user behaviour – sharing food and cooking equipment

7.6 Mobility and Transport

The idea of reducing the use of cars as a form of transport was discussed by a number of the interviewees at Murundaka, with many people voicing a similar sentiment to Delphine; *'I'm really trying hard to get, you know, to not use my car as much'* (Delphine, 6 years). The practices most often discussed as ways of improving the sustainability of transport in Murundaka were car sharing, and bike riding (as shown in Figure 7-8). These are discussed below.

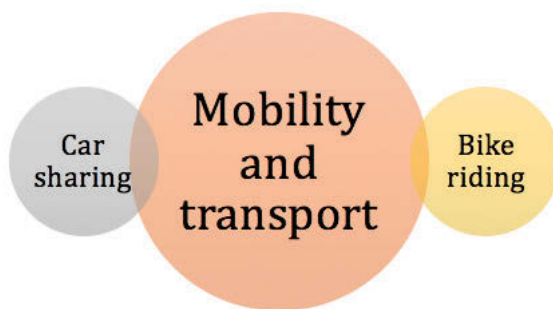


Figure 7-8: Mobility and transport practices to be discussed in this section

7.6.1 Car sharing

Car sharing is a practice that takes place in a number of forms at Murundaka. At least one member has a car listed on an online peer-to-peer car sharing network (Car Next Door), and other residents are using the available share car. Other residents co-purchased and shared a car in a smaller, private sharing network. Sustainable transportation, particularly the minimisation of private vehicle usage as well as an emphasis on greener forms of transportation was a concept designed into the community. Only 14 car spots were provided for 18 units, approved on the assumption that private vehicle ownership would be reduced. Greener transportation as an aspiration or meaning has linked with the reduced number of car spaces to encourage car sharing as a practice. Delphine raised the point that her transportation footprint had likely increased since moving to Murundaka. She'd moved from the inner-city, where she got from place to place walking or on public transport; since moving to Murundaka however, she needed access to a car.

Some within the community, like Giselle, see the current parking situation as a first step, and have a long-term plan of:

just kind of taking back the car park, reclaiming the car parking one space at a time. When we can, we haven't done even one yet, but we have reduced our cars. But we haven't done any reclaiming (Giselle, 6 years).

This is motivated not just by a desire to reduce car usage and encourage more sustainable modes of transport, but also from a 'sense of what a waste it is to use it [the car parking space] all up for cars. You know we can just do so many wonderful things out there. So that's the long-term plan' (Giselle, 6 years). This was reinforced after clearing the cars out one day to use the car park for a community birthday celebration, with umbrellas, shaded areas and a game of cricket. Delphine, who at the time of the interview was sharing a 'dying' car, had made the decision not to replace it once it stopped working⁵². She recognised that it would be a challenge not to own a car, something that she was not looking forward to dealing with, yet expressed her determination to try her best to live without one.

One significant element that has encouraged the practice of car sharing is the trust that has developed amongst community members. This facilitates the sharing of a significant resource. Jude talked about previously feeling very 'one-minded' about her car and her independence, but now sharing ownership of a car with three others since moving to Murundaka.

The one thing, well one thing that I have seen is that there has been a few, and I have done this, which is something that I never would have done before, is to share a car....

What changed? [Interviewer]

I think living in the community and trusting people. (Jude, 6 years).

The shared experiences and necessary cooperation that comes from living as part of a cooperatively managed community seem well designed to develop the kind of trust that Jude talks about.

A few residents mentioned the physical location of Murundaka in the Melbourne suburbs has a negative impact on the adoption of sustainable transport practices. Although public transport links to the area were reasonable, many Murundaka residents were used to having access to a car and found that more convenient. Delphine spoke of slowly getting used to the suburban location, and increasing her use of public transport, as well as using her bike more.

7.6.2 Bike Riding

Quite a few Murundaka residents talked about cycling for at least some of their trips. Giselle would cycle to the local farmers market, Heidi frequently rode to work, while Sophie, Greg and Jo were committed to riding whenever possible.

In terms of material infrastructure, the community had its own undercover bike shed located at the front of the property near the car park, which made it easier for residents to own a bike and

⁵² Since the original interviews, Delphine has got rid of her old car and started sharing a car with another resident. She has even been tracking her car usage since going sharing the car, noting that usage has been decreasing as she has been cycling more (Delphine 2017, pers. comms. 30 June).

participate in cycling practices. It gave people a space to store their bikes (outside their apartments), and also made bike riding a visible practice for other residents, helping to normalise cycling.

As mentioned above, the suburban location of Murundaka made it more difficult for some to ride to work in the CBD, with Heidi finding that she was '*less often riding. Which is a shame because I used to ride every single day, rain, hail or shine. And now I look at the rain and I go urghhhh.*' (Heidi, 6 years). Mikoto explained that one person had moved out of Murundaka because she '*liked just to go everywhere by bike but she found it hard...*' (Mikoto, 6 years).

Basic cycling competences (how to ride a bike, wearing a helmet etc.) are relatively common in Australian society. If cycling is to be substituted for driving as a commuting practice, however, other competences are needed. Skills such as riding on roads shared with cars, buying and maintaining a bike sufficient for riding a commuting distance, and what to do when it is raining all make cycling less challenging and more reliable as a practice that can replace driving. There were a number of experienced and committed cyclists living at Murundaka that thought they were influencing the competences and meanings within the community. This informal, and sometimes formal, knowledge sharing is crucial in spreading a practice.

Greg and I and Jo... I think our influence is filtering through ... other members will start thinking, I'll fix up my bike or if I don't like my bike, it's not comfortable, maybe I'll consider getting a different bike so that I could cycle more and people come up and say what do you do if you ride in the rain and all this sort of thing and you just give your advice so it's two-way, it's reciprocal. (Sophie, 4 years).

In correspondence since the interviews, Delphine noted that she has started riding an electric bike (charged by the Murundaka solar panels) since January 2017. She describes the support from the community as a very positive aspect of her cycling practice, for both:

technical advice and the weekly ride together to the market with other members... a special bonding time (Delphine 2017, pers. comms. 30 June)⁵³.

Greg and Sophie had visited Murundaka, before they moved in, whilst cycling around the East Coast of Australia visiting alternative communities, an experience which they wrote a book about (Foyster 2013). Greg had developed plans to run workshops about how to live life without a car. Members of Murundaka also participated in the Banyule peak-hour transport race, which saw 20 local residents, including the Banyule City Council Mayor, racing from Heidelberg to a café in the CBD on different

⁵³ 'The impact on my health - physical and mental - is tremendous. I am physically fitter but also in tune with my values and empowered. I love the idea of emission free independence... it makes me ride faster!' (Delphine 2017, pers. comms. 30 June).

forms of transport (cycling, public transport and driving). 14 of the racers had started from Murundaka (Foyster 2014a)⁵⁴. There is clearly a dynamic occurring within the community that encourages cycling as a substitution for other practices such as driving to the markets. In one example of the reinforcement of meanings within the community, Delphine said her 'conversion' to cycling was being used by others as a model to other 'would-be biking commuters' (Delphine 2017, pers. comms. 30 June).

7.6.3 Summary

The mobility and transport practices above were keenly discussed by a number of Murundaka residents. This reflected a bundle of practices that residents found important for living a more sustainable lifestyle. Cycling is the practice that represents perhaps the clearest intervention for sustainability. A number of interventions had been made or planned to encourage community members to cycle and discourage driving. Some emerged through whole community actions, for example, one of the sustainability goals of the community is to 'actively minimise our transport footprint'. This represents a formalisation of meanings that support cycling practices, and hence cycling as an activity that is encouraged for community members. Along with interventions to encourage cycling, some minor interventions to encourage defection from driving were evident: the reduction of car spaces for the community and informal discussions about continuing to reduce the number of car spaces in order to make use of that space for other activities.

Table 7-6 summarises the practices discussed in this section, describes the type of innovation or intervention occurring within the practice, and the sustainability significance of that practice.

⁵⁴ The race was won by a cyclist who arrived in 32 minutes at an upfront cost of \$0. Next mode of transport was car + train, arriving after 50 minutes at an upfront cost of \$4 plus petrol. Bus + train took 53 minutes at a cost of \$1.79 (concession), and finally the car driver (the mayor) took 75 minutes and \$10 in petrol.

Table 7-6: Key practices and elements in the provision of transport and mobility at Murundaka Cohousing Community

Domain: Transport					
Practices	Elements			Type of intervention into 'mainstream' practice (Spurling & McMeekin 2015)	Sustainability impact of practice (Schanes, Giljum & Hertwich 2016; Seyfang 2009)
	Materials	Competences	Meanings		
Car Sharing	<ul style="list-style-type: none"> Communal car(s) Car sharing platform (Car Next Door) Reduced parking spaces 	<ul style="list-style-type: none"> Recognition that only need car sometimes How to share Knowledge of how to use car sharing website 	<ul style="list-style-type: none"> Reducing environmental impact Save money Trust of neighbours Quality of life tied to access not ownership 	<ul style="list-style-type: none"> A re-crafting of existing driving practice and some indication of new practices developing 	<ul style="list-style-type: none"> Reducing ecological footprint Community building – developing social networks around shared car ownership Indirect reduction – changes in user behaviour - Sharing of cars is a more efficient use of the resources embodied in the construction of the car.
Bike Riding	<ul style="list-style-type: none"> Accessible, covered bike shed Location within bike riding distance of shops 	<ul style="list-style-type: none"> Bike riding knowledge Bike maintenance Appropriate clothing for all-weather 	<ul style="list-style-type: none"> Reducing environmental impact Save money Quick transport 	<ul style="list-style-type: none"> Encouraging practice substitution by defection from driving to cycling 	<ul style="list-style-type: none"> Reducing ecological footprint Direct reduction – shift between consumption categories - Cycling is a low/zero emission form of transport

7.7 Conclusion

This chapter replicated the approach taken with the Bundagen chapter to explore in detail the key practices influencing the sustainability of daily life in Murundaka. Again, this applies social practice theory in a new space, providing an in-depth, robust, analysis of consumption within an urban, sustainable, cohousing community. The process of identifying key practices that influence the sustainability of daily life in Murundaka reflects the complexity of daily life and the way that countless practices mesh together in an amalgam of different practices and elements. The practices discussed throughout this chapter, and the higher-level domains that they can be described as falling within are summarised in Table 7-7.

Table 7-7: Practices and domains of practice discussed at Murundaka

<i>Domains</i>	<i>Murundaka Practices</i>
<i>Creating home / community</i>	Creating a cohousing community Designing a cohousing community Community formation (joining and leaving)
<i>Governing home / community</i>	Community Decision Making Visioning & Reflection Mindful communication
<i>Dwelling the house</i>	Energy provisioning Provisioning the home (acquiring) Clothes swapping Disposing of waste Heating and cooling the home
<i>Food</i>	Growing food Shopping for food Dining
<i>Transportation / Moving Around</i>	Car Sharing Bike Riding

Different elements of meaning, material and competences all interact in the spectrum of practice entities present within the Murundaka community, which are themselves a subset of the global practice spectrum.

This chapter has presented detailed accounts of the genealogy of a number of practices that have to some extent stabilised with the Murundaka community. This helped explain why a certain practice is performed a certain way at Murundaka, or even how a certain element became established. Many threads weave together to form an observed practice, and an outside observer

can only ever hope to trace some of the most apparent threads. Yet even a partial view allows insights into the factors that could shape practices in other contexts.

This analysis has highlighted examples within the community of interventions to improve the sustainability of many practices. These included substitutions, e.g. clothes swapping, greater resource reuse and recycling, cycling, increased food production, and the recrafting of elements of practice, e.g. sharing goods, use of organic produce for cooking, shared spaces. (and changing the way practices interlocked?)

Along with these interventions that are directly linked to resource consumption or environmental impacts, there are practices that are uncommon in mainstream neighbourhoods, and clearly significant in the function of the community. These practices, linked to the creation and governance of the home and community, were particularly significant in allowing the community members to act as 'policymakers' at a scale that could impact many elements of everyday practice, in a reflexive way that was grounded in a very specific understanding of the system of practices within the sphere of the Murundaka community.

Chapter 8. Interventions for sustainable practices: the intentionally sustainable communities' perspective

8.1 Introduction

The previous two chapters described two distinct intentionally sustainable communities, Bundagen Cooperative Community (Chapter 6) and Murundaka Cohousing Community (Chapter 7) to answer RQ2. They analysed the empirical data from these real-world examples to reveal the practices that households of Australian intentionally sustainable communities are adopting to reduce their environmental impact. As well as identifying these practices, the elements contributing to making these practices sustainable were explored.

The previous chapters also started to consider the different aspects of RQ3. Throughout the chapters, the summary tables highlighted the sustainability impacts of each practice, drawing on the sustainable consumption frameworks of Seyfang (2009) and Schanes et al (2016). Finally, drawing on the interventions in practice framework for governing practices for sustainability (Spurling & McMeekin 2015) that was introduced in Chapter 3, Chapters 6 and 7 identified the type of intervention that most closely described the way that each practice had been shaped within the community.

Table 8-1 summarises the practices that were discussed in each of the case study chapters. The practices in bold are those that emerged as being distinct and particularly significant, either because of their direct impact on the reduction of the community's environmental footprint, or because of their role in enabling the community to govern practice within it, in a way that worked towards the community goals of sustainable living, by circulating 'sustainable elements' or influencing the overall practice system within the community.

This chapter continues to address RQ3, exploring in further detail how and why the practices and elements of Murundaka and Bundagen differ from those of mainstream communities, and the role of the intentional community in governing interventions in everyday practice. The differences between the communities mean that distinct systems of practice have emerged within each community. These approaches to the construction of everyday life vary, but both aim to make household consumption more sustainable. This chapter draws on concepts of systems of practice (Macrorie, Foulds & Hargreaves 2014) and interventions in practice (Spurling et al. 2013) to consider the community members as both practitioners and policymakers of their everyday life. This framing

conceives of intentionally sustainable communities as an intervention in multiple systems of practice with relevance to household consumption, with the community residents seeking to govern the system of practices of which they are part.

Table 8-1: Sustainability Practices and domains of practice at Bundagen and Murundaka

<i>Domains</i>	<i>Murundaka Practices</i>	<i>Bundagen Practices</i>
<i>Creating home / community</i>	Creating a cohousing community	Creating an intentional community
	Designing a cohousing community	Designing an intentional community
	Community formation (joining and leaving)	Community formation (joining and leaving)
<i>Governing home / community</i>	Community Decision Making	Community Decision Making
	Visioning & Reflection	Visioning & Reflection
	Mindful communication	
<i>Dwelling the house</i>	Energy provisioning	Energy provisioning
	Provisioning the home (acquiring)	Provisioning the home (acquiring)
	Clothes swapping	Electric lighting
	Disposing of waste	Disposing of waste
	Heating and cooling the home	Heating and cooling the home
		Energy consumption
		Household cleanliness, laundering and hygiene
		Toileting
<i>Food</i>	Growing food	Growing food
	Shopping for food	Shopping for food
	Dining	
<i>Transportation / Moving Around</i>	Car Sharing	
	Bike Riding	

This conception is used to examine the role of the communities in shaping these sustainable practices and shifting / encouraging sustainable consumption practices in the households.

It will then look at how the communities have intervened to improve the sustainability of the practices carried by residents through changing:

- i) elements of practice,
- ii) relations and interlinking between practices, and
- iii) the recruitment of carriers to more sustainable, or innovative practices

8.2 Analysing sustainable consumption interventions in practice

Revisiting the distinction between practice as performance and practice as entity, Spurling et al (2013) suggest that practice-as-performance (which can be referred to as behaviour) is just the observable tip of the iceberg, with the practice as entities being a more appropriate focus for sustainable policy. This suggests a shift in focus away from

those who incrementally change practices-as-performance through their more or less faithful reproduction in everyday life [practitioners], and towards those who arguably are able to intervene at the level of practices-as-entities [policy-makers] (Macrorie, Foulds & Hargreaves 2014, p.99).

The residents of intentionally sustainable communities have already been positioned as both practitioners and policymakers of their everyday life. Whilst this may be true of most households to some extent, intentionally sustainable communities operate at a 'human' (Gilman & Gilman 1991) or 'meso' (Reid, Sutton & Hunter 2010) scale, which increases the scope and scale of interventions available compared to a single household, but is not so large as to be too remote from the site of everyday action. The residents of Bundagen and Murundaka have been very involved in designing and implementing policies that shape the elements of their daily practices, from the early creation of their community visions, designs, and infrastructure (particularly in the case of Bundagen) to the ongoing community governance structures.

Intentionally sustainable communities are sites which intersect with multiple systems of practice. It is understood that individual practices are linked to varying degrees to a much broader system of practices, in which changes to one practice or element can have ripple effects throughout the whole system. Macrorie et al (2014) describe this framing as encouraging the researcher to focus not just on 'the doings and sayings of everyday life' but also the 'practitioners seeking to govern the systems of practice of which they are part' (p.99). Therefore, it brings attention to the dual role of the members of intentionally sustainable communities.

The systems of practice within the case study communities include the creation of home and community, the design and, in many cases, building of the houses and community facilities, the ongoing governance of home and community, as well as significant domains of everyday practice including dwelling the house, food production and consumption, and transportation. Some of the practices were distinctive in a neighbourhood / community setting, or recognisably different in many elements from more mainstream forms of the practice. Others were variants of widely performed practices, such as growing food in a garden, shopping for food, or cleaning the house. The next section will discuss the direct impacts that the changes in the systems of practices have on the environmental footprint of the communities. The rest of the chapter will explore how the communities have intervened to improve the sustainability of their practices.

8.2.1 *Direct interventions for sustainable consumption (Sustainability impact of practices)*

The exploration of everyday practice in the case study communities in Chapters 6 and 7 (illustrated in Figure 8-1 and Figure 8-2) revealed changes to many practices (and elements) directly related to reducing the ecological footprints (EFs) of the community (based on the strategies and factors discussed in Section 2.3). These are summarised according to the priority areas for sustainable consumption in Table 8-2 and these included: reduced size of private households, reduced private ownership of goods, general prevalence of vegetarianism and veganism, greater local food production, renewable energy generation from solar panels, water provision from rainwater tanks, house construction from local and recycled materials, use of composting toilets, greater reuse and proper recycling of waste, and less use of heating and cooling in the building.

The right-hand column includes innovations that were highlighted as contributing to the comparatively low carbon or ecological footprints of the communities covered in the systematic literature review (see Chapter 5: Common practices across communities). Notably, these interventions covered almost all (Bundagen) or all (Murundaka) of the priority areas. This confirms the importance of the 'meso' level of the household and immediate neighbourhood as a point of intersection for a wide variety of practices (Reid, Sutton & Hunter 2010), given that these priority areas account for between 70-80% of life cycle environmental impacts (Tukker et al. 2010). It also suggests that interventions within intentionally sustainable communities provide scope for significant and potentially far-reaching improvements in household consumption sustainability.

Table 8-2: 'Direct' Sustainable consumption practices and elements by priority area

Sustainable consumption priority area	Innovation in practice (practice substitution)		Re-crafting of elements		Sustainable consumption innovations from Chapter 5
	Bundagen	Murundaka	Bundagen	Murundaka	
Mobility (Car)		<ul style="list-style-type: none"> • Car-sharing – different form of driving • Encouragement for defection from driving to cycling 		<ul style="list-style-type: none"> • Bike sheds • Reduced number of car spaces 	<ul style="list-style-type: none"> • Reduced transport footprints – car sharing, community co-working spaces
(Air travel)			<ul style="list-style-type: none"> • Valuing of sufficiency (meaning) • Low housing cost – income for travel (-ve) 	<ul style="list-style-type: none"> • Meanings of sufficiency – encouraging bike holidays, or train holidays 	
Food (Type)		<ul style="list-style-type: none"> • Regular shared meals in common kitchen – sustainability comes from increased social capital 	<ul style="list-style-type: none"> • Prevalence of vegan and vegetarianism values (meanings) 	<ul style="list-style-type: none"> • Vegetarian common meals 	<ul style="list-style-type: none"> • Reduction of meat consumption was common (shared community meals are vegetarian)
Food (source)	<ul style="list-style-type: none"> • Food growing substituted for food shopping 	<ul style="list-style-type: none"> • Food growing substituted for food shopping 	<ul style="list-style-type: none"> • Land available for growing own gardens (material) • Local production or sourced food valued (meaning) • Organics valued (meaning) 	<ul style="list-style-type: none"> • Land available for growing own gardens (material) • Local production or sourced food valued (10% self-grown) • Organics and locally grown valued (meaning) • Bulk buy and CSA sourced food (material) 	<ul style="list-style-type: none"> • Organic gardening and farming was common (particularly on the larger areas)
Home building	<ul style="list-style-type: none"> • Self-building of homes • Compost toileting 	<ul style="list-style-type: none"> • Semi-deliberative development process, with core group providing concept design for future home 	<ul style="list-style-type: none"> • Recycled and natural materials prevalent • Cooperative ownership model discourages of over-capitalising / excessive renovation • Rainwater tanks (material) 	<ul style="list-style-type: none"> • Shared spaces in home design (increasing access to space, in an efficient manner) • Smaller individual house size (material) • AC only in top floor units (material) 	<ul style="list-style-type: none"> • Sustainable design (local construction materials, or passive solar design with increased insulation)
Energy-using Products (EuPs)	<ul style="list-style-type: none"> • Off-grid, home energy production 	<ul style="list-style-type: none"> • Energy auditing of households 	<ul style="list-style-type: none"> • Valuing of energy conservation • Voluntary simplicity and downsizing valued 	<ul style="list-style-type: none"> • Value of sharing over ownership • Off-setting of energy usage (Carbon neutral through solar) • Voluntary simplicity and downsizing valued 	<ul style="list-style-type: none"> • ownership was said to be reduced through sharing of communal facilities.
Manufactured Goods	<ul style="list-style-type: none"> • Reuse and recycling of manufactured goods 	<ul style="list-style-type: none"> • Reuse and recycling of manufactured goods • Clothes swapping 	<ul style="list-style-type: none"> • Value of sharing over ownership • Valuing sufficiency • Share goods and resources 	<ul style="list-style-type: none"> • Value of sharing over ownership • Shared goods and resources 	<ul style="list-style-type: none"> • Waste disposal at Ecovillage at Ithaca was 75% less than US average

However, it is notable that most of the niche community practices related to creating and governing community highlighted in the summary sections of the case study chapter are not directly related to reductions in EF; they do not directly improve any of the priority areas for action. SPT research in the context of sustainable consumption has tended to emphasise the link to material resources (Røpke 2009). Yet, these practices, which are not commonly performed by mainstream communities of this scale, appear to be critical in enabling the community to act as a policymaker and intervene on an ongoing basis within the ecosystem of practice within the community.

This is an important consideration, as sustainability advocates have tended to focus on directly reducing environmental impacts (Capstick et al. 2014). Others have made similar points: Capstick et al (2014) for example conceptualised the type of radical change required to move towards sustainability as both 'radical environmental impacts' and 'radical institutional impacts'. The role that the supporting and enabling practices plays in the ISCs specifically supports the arguments of Seyfang (2009), that community-building, collective action and directing attention towards providing new systems of provision are all crucial parts of ecological citizenship for sustainable consumption. The role of the community creation and governance practices in enabling or supporting more sustainable elements to be incorporated into the practice ecosystems of Bundagen and Murundaka will be discussed in further detail later in this chapter, in Section 8.5.

8.3 Key interventions in the elements of practice

This section will discuss the elements of practice that were distinct in the communities and were significant for the recrafting of practices to less resource intensive, more sustainable forms.

The introduction of some elements could be considered as the relatively simple re-crafting of mainstream practice, reducing environmental impact. So, for example, the reduced size of private households in Murundaka Cohousing reduced the heating energy usage for individual households, contributing to their lower electricity usage. The solar panels on Bundagen households meant that the electricity used to power refrigerators or washing machines did not contribute to greenhouse gas emissions. Yet the changing of these elements would inevitably have wider effects. For instance, the solar power for the refrigerators was in limited supply, so at least some households were very conscious of not leaving the fridge door open, even going to the extent of fitting a latch to the door to ensure it shut properly. It seems rare that a newly introduced element could become integrated into everyday practice without having some impact wider knock-on effects on the other elements of practice within the communities.

This research has also considered a wide array of practices within the case study communities, and at least to the extent of understanding how the communities came to be formed, has explored historical changes in the practices. It has highlighted that distinctive elements, such as those mentioned above, are partly the outcome of practices of community creation that have developed from a much more complicated process than a 'simple' recrafting of a practice element.

Table 8-3 provides a summary of the key elements present within each community specifically, along with a summary of the higher-level common elements across the two communities that are distinct from what would be present in mainstream household practices. These common elements⁵⁵ are then expanded upon in the following section, discussing how they contribute to sustainability within the communities, and the role of the community in shaping and re-crafting the elements within the community practices.

⁵⁵ The term elements is here used at a higher level of abstraction than the specific elements of practice identified in each case

Table 8-3: Key elements for sustainability in circulation at Murundaka and Bundagen

	Bundagen	Murundaka	Common elements
Meanings	<ul style="list-style-type: none"> Formalised and shared principles <ul style="list-style-type: none"> environmental responsibility economic independence social harmony Formalised by-laws (capturing shared general understanding) Self-sufficiency 'treading lightly' Stewardship and caretakership of the land Conservation 	<ul style="list-style-type: none"> Shared and formalised vision statement Expressed core values: <ul style="list-style-type: none"> Sustainability Inclusiveness Social justice (including equity and access) Waste as a resource to be reused Access was more important than ownership Trust in fellow community members Voluntary simplicity and downshifting 	<p>Explicitly shared and understood meanings</p> <p>Supportive environment for pro-environmental values</p> <p>Simplicity and self-sufficiency (post-material)</p> <p>Social capital and trust</p> <p>Sharing and trust - Access over ownership</p>
Materials	<ul style="list-style-type: none"> Sharing - Tractors/ slasher, chainsaws, lawnmowers/ whipper snipper, a generator to pump water. Trading – unwanted furniture, clothes, batteries, pianos etc. 	<ul style="list-style-type: none"> Shared kitchen goods (e.g. food processors, coffee machines, industrial-scale fridges and freezers), garden items (Secateurs, spades, pitchforks, wheelbarrows, garden produce), and work tools. Traded - clothes (through the clothes swap) 	Shared Goods
	<ul style="list-style-type: none"> Shared 'expanded houses' based (loosely) around shared amenities such as toilets, laundries and/or kitchens Shared land, common building and kitchen, old school building, meditation hall, playgroup building 	<ul style="list-style-type: none"> Shared spaces as crucibles for intermixing of practice Clustered design Common House Reduced size of private households 	Shared Space
	<ul style="list-style-type: none"> No electricity network connection <ul style="list-style-type: none"> Individual household solar and battery systems (1-2kW sizes) No water network connection <ul style="list-style-type: none"> household rainwater tanks community-scale network linking series of dams No sewerage connection <ul style="list-style-type: none"> Compost toilets RELN trenches (greywater) Outside of waste collection network Local and organic food production 	<ul style="list-style-type: none"> Grid-connected, but has a 17kW rooftop solar Connected to water network <ul style="list-style-type: none"> rainwater tanks for garden Within waste collection network <ul style="list-style-type: none"> RUG room as additional stage in disposal / recycling system Local and organic food production 	<p>Infrastructure and systems of provision</p> <hr/> <p>Co-location of everyday practices</p>
Competences	<ul style="list-style-type: none"> Awareness of natural rhythms of weather and processes Distributed competences Community competences - ability to share / access knowledge Social learning 	<ul style="list-style-type: none"> Non-violent communication skills Conflict resolution skills Access to expert knowledge within the community Collective knowledge Opportunities for Social learning 	<p>Working together as a community</p> <p>Distributed and collective competence</p> <p>- ability to share / access knowledge</p> <p>Social learning and knowledge sharing</p>

8.3.1 Meaning

This section will explore the distinctive meanings relevant to sustainable practice that emerged from the case studies. Many of these ideas can be described as post-materialist values: an emphasis on simple living, creating supportive, strong communities with good social capital, the prioritisation of shared access rather than ownership, along with the feature of meanings being made explicit amongst community members.

Simplicity and self-sufficiency

Residents of both communities discussed ideas of voluntary simplicity or downshifting, and the desirability of reducing levels of material consumption. Residents questioned the desire for novelty that is at the heart of consumerism. Anti-consumerist, or at least reflective consumerist sentiments were aired in both communities, such as '*I don't necessarily need to have a new one of those things, I don't have a great need for that aspirational consumerism*' (Allan, Bundagen, 34 years), about finding alternative ways to meet the need for novelty and newness that aren't traditional forms of consumerism. In this way, some practices, such as the open-closet clothes swap at Murundaka, were seen as challenges to the dominant consumerist paradigm. A number of residents talked about downshifting and the idea that consuming less meant spending less which meant having fewer work demands and which, in turn, creates more free time:

If you choose voluntary simplicity you can live with not too much. If you're happy not to go out in restaurants and not to buy new clothes all the time and not to get your hair done at the hairdresser you can live very simply. So that's what people often choose by living here (Rejane, Bundagen, 26 years).

Well obviously it is a more simple way of living, and that for me, like on a personal level of that really adds to my own happiness. But then also I'm living with other people who also want to live, mostly also want to live simply. And so you know, we've, we share that. Like you know we share our produce, and we look after each other, so there is a social element to being able to have those, yeah them sharing those values. (Jane, Bundagen, 11 years)

Schor (2010) described 'self-provisioning' as one 'leg of the stool for living smart and sustainably' (p.116) as it can create long-term economic benefits that increase the array of options for employment, time use, and consumption available to a household.

Explicitly shared

Meanings related to sustainability were carried by many members of both communities. Whilst they were likely to be more prevalent than in the mainstream, they are present as significant meanings amongst portions of the wider population⁵⁶. One of the key aspects that differentiates a community

⁵⁶ See the voluntary simplicity movement for example (Etzioni 1998)

such as Bundagen or Murundaka from mainstream communities is the manner in which some of these meanings are made explicit. Through the visioning, community formation and ongoing governance practices discussed above, Bundagen and Murundaka developed a set of guiding principles or a community vision that captured core socially shared meanings of their members. These were further developed into more detailed policies, rules and regulations that formalise these ideas and aspirations as shared understandings of appropriate ways of being. For example, the Bundagen By-Laws list a number of ecological guidelines that expand upon the founding principles, including: i) Establish sanctuary based on the unity of all living things, ii) Learn and educate in Earth care, and iii) Create and implement sensitive and responsible management guidelines for the land, sea and their inhabitants towards a balanced and sustainable future.

Schelly (2015) describes policies as systems of provision that 'mediate and make meaningful the relationship among technology, residential dwellers, and the behaviours in which they engage at home' (p.188). The link between policies (as formalisations of meanings) and practices can be seen in Bundagen, for example in the link between the meanings of economic independence and environmental responsibility, and the universal adoption of solar power systems that restrict the energy available to community members.

A further example of the formalisation of meanings into 'policies' at both communities was that only vegetarian food was cooked for meals in the common houses. As mentioned previously, dietary choices have significant consequences for the environmental impacts of food consumption. Whilst not regulating food practices in the individual households, this was a representation of the community 'position' on dietary practice.

Key meanings of sustainability were also encoded in the materialisation of the community and its infrastructure, which can have long-term influences on practice performance in the community. These ideas will be discussed more below in Section 8.3.2.

Supportive environment

Capstick et al (2014) point out that adopting meanings that run counter to mainstream social norms can be difficult for individuals; 'the establishment of an ethic of reduced – and/or radically different types of – consumption is likely to require sustained efforts at a community and societal level' (p.438). This may be one of the important benefits of the sustainable intentional community form, providing a protected niche where an alternative set of generally understood meanings or social norms (created and formalised through a participatory visioning process) can be cultivated in a supportive environment. Grabs et al (2016) argue this can change the social significance of particular actions, at least within the community (e.g. consumptive acts that may have once been seen as

signalling a lack of money, like wearing second-hand clothes or sharing a laundry, are instead seen as sustainable behaviours).

Scheuer (2002) found that people living in cohousing exhibited increased environmentally responsible behaviour. Even though residents in existing 'green' cohousing developments often already held pro-environmental values before living in a cohousing community, the social support, stimulus and coordinating systems often create an environment for even greater sustainability (Meltzer 2005).

These findings were reflected in some of the interview responses. Jane, for instance, didn't think her environmental values, or her food growing practices, had changed much since moving to Bundagen.

...the values that I've got now I came with them... So I always tried to grow some food before I came here, for example. And I probably shopped in a very similar way to the way I shop now (Jane, Bundagen, 11 years)

However, she strongly agreed with the idea that living on Bundagen made it easier to live in a way that reflected the values she held, particularly around living simply.

And I love it, and the more time goes past, aside from the social and the low cost actually in all genuineness the more environmentally active I become (Jane, Bundagen, 11 years)

This encouragement of simple living and gaining happiness from non-material aspects of life were commonly expressed ideas across both communities. Not surprisingly, people found living in a community where people share or openly express sustainability values and are generally supportive of environmental initiatives (such as an apartment at Murundaka deciding to remove their gas connection to reduce heater energy consumption) provided encouragement and empowerment.

Social capital and trust

Social capital has been defined in many different ways, but it can be understood as a multidimensional capital related to the strength of social networks within a group (Helliwell & Putnam 2004) that consists of 'values, trust, reciprocity, and civic engagement' (Putnam 1993, 2000, 2001 cited by Ruiu 2016, p. 4). Ruiu (2016, p.5) summarises the benefits of social capital as: access to information and knowledge, social control, solidarity and mutual support, and engagement and civic sense. The development of strong social capital is a noted feature of intentional communities (Mulder, Costanza & Erickson 2006) Ruiu (2016) describes three types of social capital that may be generated by cohousing communities: bridging (external ties – integration with the wider context), bonding (internal ties – supportive networks in the community), and linking (ability to create partnerships with external actors). The bonding social capital of these communities has been described as peculiar, as it mixes the characteristics of family ties (primary social capital) with the

ties of associations (secondary social capital) (Ruiu 2016). High levels of social capital are associated with happiness, or wellbeing (Tokuda, Fujii & Inoguchi 2010). This is an important aspect of sustainable consumption, as a focus on quality of life rather than material prosperity is a key tenet of many consumption intervention strategies (Tukker et al. 2010). The intentional communities literature highlights four aspects of communities that are crucial for promoting social interaction and developing strong social capital. These are participation in the design of the community, a design based on communal spaces that encourage interaction, consensus decision-making processes, and self-management by residents (Ruiu 2016). All of these aspects were evident in the case study communities, to varying degrees.

Both communities placed a high value on encouraging social harmony, with trust being a key aspect of this. Whilst social trust - 'the belief that others around you can be trusted' (Helliwell & Putnam 2004, p.1436) - is not the same as social capital, it is a strong index of social capital, and a 'nearly universal concomitant' (p.1436). Trust is a key element in the introduction, circulation and persistence of many practices and elements within the communities. It also acts as a mediating factor in many other interactions amongst community members, impacting on the sharing of competences and receptiveness to new ideas from other community members.

Sharing and trust

Sharing was valued in both communities, whether connected to shared spaces, or shared goods and resources. Litfin (2016) draws attention to the significance of trust, 'this nebulous yet vital quality' (p.261), in relation to sharing in many ecovillages. As she highlights, when given the option of sharing or private ownership, sharing only makes sense in the context of trust. Jude (Murundaka) reflected on the importance of trust, noting that trust in other community members was key to her overcoming a reluctance to share valued items (car) with other people. The same concept applies to many sharing-based practices, with established trust between group members crucial for enabling the adoption of new social practice, such as more efficient resource consumption through sharing cars, tools and household items (Botsman & Rogers 2010; Grabs et al. 2016). Litfin (2016) emphasises the significance of sharing for sustainability, describing the sharing of material (e.g. property, vehicles etc.) and intangibles (ideas, skills, dreams, stories and deep introspection) as the most encompassing explanation for decreased consumption in affluent societies. A focus on access rather than ownership through sharing was present in both communities, though this was more explicit at Murundaka. They endorsed the concept that a shared resource, or space, can satisfy the same need as an individually owned one. For many residents, access to material goods was maintained or even increased without necessarily increasing the number of goods required, while reducing the cost to each household. Through the practices and elements that strengthened social capital and trust (discussed in the previous section - self-governance, consensus, shared spaces,

participatory development), sharing was made much more common. This research reinforced some of Litfin's (2016) conclusions that trust between community members is crucial within the sharing practices of the case study communities, whether they be car sharing, shared ownership and management of property, collaborative consumption of tools and equipment or community gardens.

8.3.2 Materials

The material element of practice has typically been described within social practice research as the element with the greatest direct link to the sustainability of consumption (Røpke 2009). This section will explore the distinctive material elements relevant to sustainable practice that emerged from the case studies. One of the most significant interventions in reshaping the material element of everyday life at Murundaka and Bundagen was the wide array of communal or shared materials. This could be seen in the shared infrastructure systems that the communities created, the sharing of goods and equipment, as well as the extensive sharing of space. These contributed to making everyday practices, performed in a shared environment, observable throughout the community.

Infrastructure and systems of provision

Infrastructures can be seen as 'distinctive forms of materiality' within systems of practice (Shove, Watson & Spurling 2015, p.280). They provide the foundation of varied systems of provision that are fundamental parts of almost all practices, and are particularly relevant for considerations of resource consumption and environmental impact. Infrastructures (such as networks and grids) are described as possessing four key qualities that influence and describe their materiality (Shove, Watson & Spurling 2015). Infrastructures: i) are *connective* and *extensive* (generally), linking together different places and sites of practice, ii) generally enable *multiple social practices* concurrently, iii) generally provide services to multiple users, so they are *collective*, iv) are *obdurate*, with infrastructures frequently lasting beyond the life of the practices they were designed for, and represent significant sunk costs, therefore will often be adapted to new practices and purposes than those they were designed for (Shove, Watson & Spurling 2015). Particular designs of infrastructures will mean that 'certain forms of demand are unavoidably inscribed, for example, in the design and operation of electricity and water infrastructures and in the architecture of the home itself' (Shove 2010, p.1278). Base infrastructures (e.g. supplying electricity, water, waste transfer, mobility) are often expensive, and difficult to change once they are in place, so users are often embedded in certain structures and social context that shape and constrain everyday practice (Schelly 2015).

The New Economics framework for sustainable consumption (See Section 2.3) suggests that new socio-technical systems of provision are required if major sustainability improvements are to be achieved (Seyfang 2009). A benefit of grassroots innovations is they can create a space where new

systems of provision can be developed (Seyfang & Smith 2007). As discussed, basic infrastructure has obdurate significance as a material input to many practices. Therefore, the ability of an intentionally sustainable community to re-create infrastructure can be a key means of expressing their critique of the existing socio-technical system. Within both communities, there were a number of novel alterations to the systems of provision, such as the off-grid solar power system of Bundagen, which were summarised in Table 8-3.

Bundagen and Murundaka provide two different examples of community intervention with infrastructure and systems of provision. The process of creating a new community development provided an opportunity for the members to design a number of their systems of provision, particularly at Bundagen. Bundagen was largely designed to be off-grid and self-sufficient for many resources, using many technologies like solar panels and composting toilets with very low environmental footprints. This reduced the resource intensity of material elements (such as electricity and fertiliser) that were used in many practices. The location and development process of Murundaka limited the ability of the community to create new, sustainable, infrastructures of provision, compared with Bundagen. It also had easier access to existing infrastructures, meaning the comparative cost difference of going off-grid as they did at Bundagen, was much greater. So whereas Bundagen recreated systems and infrastructures in a more sustainable manner, Murundaka created some intermediary infrastructures and systems in-house (e.g. RUG room, internal car share) as well as limited new infrastructure (garden) to modify the interaction with wider practice systems. The RUG room served as an onsite sorting and storage facility to process 'waste' materials for reuse or upcycling⁵⁷. This created an extra stage in the waste disposal system, which appeared to increase the opportunity for diverting waste away from disposal. It was an innovative response to improve the effectiveness of the waste disposal system in properly dealing with waste, without creating a whole new system.

In an example of the benefits that can arise from organising a group of households at scales greater than the single household, Murundaka installed a 17kW grid connected solar-system in 2015. This meant they are net-zero electricity users. Historically, coordinating apartment building residents in Australia to install solar systems has been difficult (Sturmberg 2017).

Shared Goods

Meltzer (2005) and Lietaert (2010) both emphasise the impact that cohousing can have on the pro-environmental behaviour of residents, particularly by establishing systems for sharing goods, resources, space and labour. The sharing systems and collaborative nature results in reduced levels of consumption, and less wastage (Lietaert 2010). This sharing of goods can deliver sustainable

⁵⁷ Some of the different materials collected in the RUG room for reuse include: glass jars, green bags, bubble wrap, ice cream containers, string and twine, boxes, egg cartons, beer bottles for brewing

consumption benefits either by intensifying the use of certain goods (e.g. one chainsaw is used by 30 households, rather than 30 different chainsaws being required). Alternatively, some people may have access to different materials than they otherwise would have (e.g. a chainsaw, a food processor in the shared Murundaka kitchen, or a piano), allowing them to participate in different practices (whether that be woodcutting, cooking with a food processor or playing the piano) without the commensurate resource burden of a newly made food processor, hopefully delivering quality of life benefits.

Key to enabling effective sharing of goods are strong social capital and trust within the community, as discussed above. Shared spaces are also particularly relevant, as social proximity and regular contact reduce the barriers to participating in sharing systems, compared with sharing systems that operate on a wider scale⁵⁸. One example often put forward by advocates of the sharing economy is the power drill, which people may use for only a few minutes in their lifetime. From a resource consumption perspective it would be much more appropriate to borrow from a 'tool library' or someone who already owned one rather than buying a new one specifically manufactured for those few minutes (Botsman & Rogers 2010). This kind of sharing is made much simpler by the proximity of members of the community to the sharing hub (i.e. the garden shed or the common house), as well as the shared understandings and trust between community members.

Shared spaces

The physical materials and infrastructure of the communal spaces and resources provided opportunities for several practices that would have been difficult to access within the confines of a single dwelling. They were also seen as a key material element. Both communities sought to cluster the households in specific sections of the properties, minimising their built environment footprint and maximising the other land that could be preserved for natural vegetation (Bundagen) or used for consolidated outdoor space (Murundaka).

For Murundaka residents in particular, the generous provision of shared space was the biggest difference in the built environment of the community compared with more mainstream households. The residents highlighted this as a key element that was fairly unique to a cohousing community, and it was integrated into most of the practices discussed. It gave the community members access to large amounts of space and by sharing the embedded costs of construction and ongoing heating and cooling resources created the opportunity to reduce overall resource consumption.

Judson and Maller (2014) describe the changing nature, and shifting boundaries, of work and home life practices, as information and communication technologies allowed working arrangements to become more flexible. A number of researchers have suggested that as the home becomes the site

⁵⁸ E.g. <https://www.openshed.com.au/>

of a greater diversity of practices, it often coincides with the need for specially dedicated spaces (i.e. home office), increased floor area and increased number of appliances, all of which increases consumption in the home (Gram-Hanssen 2010; Judson & Maller 2014). The greater use of shared spaces, particularly in the urban setting of Murundaka where space was restricted, provides an example of adapting the material built form to changing usage patterns without necessarily increasing floor area and appliance usage. Murundaka had a couple of spare rooms that could be used as office space or guest rooms, though people would more frequently use the common living area as a workspace. This was not simply a material change; it was linked to changing meanings about sharing of space, and competences to negotiate and manage shared usage. The result, however, was described as a more efficient use of space by community members.

Beyond these benefits, the communal spaces and resources provided opportunities for a number of practices that would have been difficult to access in a single dwelling. Giselle stated the generous communal spaces created an 'expansive psychology', providing an area where ideas could emerge:

you see the effect of just providing a space, just having a big enough space. It's the apartments yes, but it's the common shared facilities where it happens. And it is like... alchemy. It's transformational. (Giselle, Murundaka, 6 years).

The 'alchemy' here, describes how different people and ideas combine in large shared spaces in unexpected and sometimes far-reaching ways. The residents made use of the space to host workshops, to act as hubs for CSA food boxes, as spaces where community governance (meetings, planning charrettes etc.) could be held, or alternatively for cool retreats during summer heat waves.

Practice theory literature has discussed the significance of communities as crucibles in which new arrangements of potentially innovative and sustainable practices are formed (Shove, Pantzar & Watson 2012). Shared spaces provide the focal point where varied performances of practice can be observed, and elements can be circulated. This idea is expanded upon below.

Co-location of practices

Co-location allows meanings about private household matters to be exposed to the (often unconscious) scrutiny of fellow community members. This creates the opportunity for reflection and change upon previously inconspicuous daily practices. Warde (2005) points out that the individual, as the carrier of many different elements, and performer of many different practices, acts as a cross-over point. Practices may, therefore, change as new combinations of elements are configured by practitioners, or as variations in individual practice performance come into contact, interact, and act as the seed for collective practice changes (Hargreaves 2011).

Strengers and Maller (2011) point out that significant variations in practices can exist even within households, such as how partners perceive 'normal' and 'appropriate' cooling methods. Their

research on household heating and cooling found the 'meeting' of different practices within a single household resulted in continual processes of 'debate, negotiation and compromise'. Within the shared spaces of the case study communities, a greater amount of everyday life is enacted in semi-public spaces, increasing the 'meeting' of carriers and their practices. Allan explains how this constant exposure to different ways of doing the inconspicuous activities of everyday life is more pronounced in the cohousing common house, or the Bundagen 'expanded house':

... it is organised into villages... you're having a lot closer interaction with more people. So it's a very social place, and I think that's, perhaps one of its main functions in a way. It operates as a large body of people, so you get a lot of cross-pollination, a lot of ideas get hammered out, and it can be difficult to try and get to some kind of consensus decision, out of all that, but it certainly allows a free dispersal of ideas. (Allan, Bundagen, 34 years)

This sometimes leads to direct challenges about certain actions ('who bought the single-use cling wrap'), perhaps more significantly though is the natural, subtle influence on meanings and shared understanding of what is appropriate and possible, by being around people doing everyday things in different ways. Sophie spoke about how her food priorities had shifted from eating cheaply to eating organically, without any specific intervention. Jo described learning about plastic bag recycling in a similarly non-confrontational way:

the first meeting I came to someone handed around a bag to collect soft plastics in and you can recycle that at Coles and I hadn't known that, I had no idea about that, so that has just dramatically changed, even just that first experience. I think a lot happens through that shared knowledge and collective ideas about different ways to do things (Jo, Murundaka, 6 years)

The important role of making inconspicuous consumption practices visible was reinforced by a study with the LILAC cohousing group in the UK which highlighted that many residents can be reluctant to admit when they don't understand how to use their sustainable homes, so casual opportunities for exposure to new ideas can be of great significance for residents gaining new competences (Baborska-Narozny, Stevenson & Chatterton 2014).

This discussion of shared spaces emphasises the interlinked nature of elements and practices. The communal spaces become 'crucibles'; fertile and dynamic areas where different elements and practices interact, allowing the spread of different elements between community members to occur.

8.3.3 Competences

Three main aspects of the dynamics of competence within the case study communities have been highlighted so far from the research. These are the concepts of community-level coordination,

distributed and community competence, and the sharing of knowledge and social learning within the communities.

Working together – community coordination

Competences in working together effectively were critical to enabling many of the larger scale interventions and practices of the communities, particularly the community creation and the re-crafting of various major infrastructures. Specific skills allowed this coordination to hold meetings, communicate in an effective manner, or participate in visioning sessions. Bundagen had the long induction process that served as probation to see if people could demonstrate the necessary skills for effective community governance. Murundaka provided specific training to members on living in cohousing, including sessions on mindful communication and conflict resolution. They were introduced to a community where these competences were constantly required in many aspects of communal living. As Giselle stated, these skills were important because community meetings could be challenging:

some of them [community meetings] are rugged. Although they used to be, I don't think that is the case now. We have really polished our act a lot with meeting procedure and conscious, you know mindful communication skills (Giselle, Murundaka, 6 years)

Distributed and collective competence

Distributed and collective competences describes how expert knowledge from one community inhabitant could contribute to practices which benefitted many community members. This is particularly relevant regarding competencies of sustainable living, an area that can be extremely complex and is often contested. Graf et al (2012, cited by Grabs et al. 2016) explain that in complex or uncertain situations, individuals often rely on socially grounded decision-making heuristics, trusting the majority view rather than relying on individual knowledge. In other words, competences of those with particular areas of expertise related to sustainable living in the community can influence (Meltzer 2005), or be drawn on by many members in their daily practice. For example, in Bundagen some people had become experts at managing the shared composting toilets, or gardening, or had extensive knowledge of electrical technology to manage the solar systems. At Murundaka, there were people passionate and knowledgeable about permaculture gardening, home energy auditing, and waste management and reuse. Not everyone has those competences, but they were relatively easy to access by others in the community, either through existing initiatives such as food production groups or by relying on the existing social relationships and simply asking for help. As long as there are people in the community who have them, the benefits can be shared by all.

In the examination of the compost toileting practice at Bundagen, there was the implication that Bill's neighbour (who shared an extended house arrangement with Bill) hadn't taken sufficient

interest in the maintenance of the composting toilet. However, competence in all aspects of proper compost toileting practices do not need to be equally distributed amongst all residents, there only needs to be one 'expert' composter for each toilet. Therefore, the increased communality may intervene in certain practices by allowing people to 'borrow' elements such as competences (this could also be relevant for meanings and materials) from others to participate in a beneficial practice that they may not have otherwise have been able to or interested in. This can be seen as the beginnings of an evolution in this particular practice, in some ways similar to the evolution of driving from the time in the early 1900's when internal combustion engines so commonly broke down that 'driving and repairing were in effect one and the same' (Shove, Pantzar & Watson 2012, p.27). Maintenance was once integral to the practice of driving, however changes in materials (improved reliability of engine technology) and meanings of driving (from an adventure, to a means of transport) meant repairing a car became a separate practice to driving, changing the distribution of various competences.

From a mainstream perspective, we could speculate that something like a composting toilet system could work as an intervention in practice in an apartment block if there is building management that takes responsibility for the maintenance competences.

Role of social learning

The other concept, which has not been discussed in depth to date, is the role of social learning and knowledge sharing within the case study communities, and how that impacts the sustainability of daily practice. One aspect of this was discussed above when talking about the impact of shared common spaces on circulating ideas and different ways of doing amongst the communities. Talking to others and watching others go about their daily lives are important means of gaining exposure to new forms of competence. However, it is useful to think more deeply about different forms of knowledge described in the literature. The most common distinction is between practical knowledge, or know-how, and intellectual knowledge, or know-what (Brown & Duguid 2001). The competences that are easily shared through discussion and observation are more strongly associated with intellectual knowledge. It is these areas of knowledge that have most commonly been targeted by information-based sustainability behaviour change programs. Yet, as Brown and Duguid (2001, p.204) argue, practice and practical knowledge should be prioritised, to make 'the circulation of explicit knowledge [know-what] worthwhile'. Therefore, while the circulation of intellectual knowledge and ideas through various forms of community interaction are valuable, it is when this occurs in conjunction with opportunities for practical participation and learning-by-doing that they can be most effective. Shove et al (2012) summarise sociological research describing how new recruits become initiated into practices through the acquisition of practical competences, arising from 'first-hand, embodied experience' (p.69).

The role of social learning is therefore key, with studies highlighting the significance of social ties for recruiting people to new practices (Shove, Pantzar & Watson 2012). Sahakian and Wilhite (2013) describe social learning as the means through which change within and across practices can occur. There were many examples in the case study communities of members participating in different pro-sustainability practices, guided by a comparative expert and able to learn-by-doing. Residents discussed learning through exposure to '*shared knowledge and collective ideas about different ways to do things*' (Jo, Murundaka, 6 years). Observing new forms of know-how can occur in semi-formal situations (e.g. regular gardening working bees, Landcare groups or community meetings), or through more informal everyday interactions. These all provided opportunities for 'legitimate peripheral participation', the means of conceptualising learning proposed by Lave and Wenger (1991) with their work on Communities of Practice (CoPs). Lave (1991) argues that learning arises through both cognitive and social processes, and should involve two stages. First, gaining a broad understanding of what is to be learned, then participating in the practice, referred to as – situated learning in communities of practice (Sahakian & Wilhite 2013). Sahakian and Wilhite (2013) link this to consumption, arguing that initiatives aiming to encourage sustainable consumption practices should first provide a general understanding of 'what is to be learned', but crucially also allow participation in these more sustainable practices.

The extensive social interaction of both communities, but particularly Murundaka, creates an environment which facilitates knowledge sharing. For example, residents could relatively easily improve their own gardening know-how by joining the gardening group. The barriers to involvement in activities such as gardening groups were low as they would occur in the residents' own backyards, and with people they already knew. The manner in which the social and physical structure of cohousing can facilitate the exchange of ideas and knowledge between residents was a feature noted by Meltzer (2005). In Murundaka, this exchange extended from general gardening to include a number of workshops with external instructors that were organised and hosted in the Murundaka backyard but were open to the wider community as well.

In both case study communities, it is possible to consider CoPs developing around both communal living and sustainable living. The community members are actively choosing to live in a manner different from the mainstream, both in terms of communal governance / interaction and encouraging sustainable lifestyles. To a large degree, the community members share an understanding about what is important, and how the community is endeavouring to address this. They can engage in a productive manner with other members of the community in order to practice sustainable living and can draw on the resources of the community to do so (Wenger 2010)⁵⁹.

⁵⁹ The 'regime of competence' through which a CoP recognises membership (Wenger 2010, p.2):

Throughout this thesis, the exploration of sustainability practice and its constituent elements has been structured to illustrate the diversity and interconnectedness of different practices that contribute to sustainability in the communities. The next section explores this idea in more detail, discussing examples of the interconnected nature of practice and elements within the communities, and conceptually mapping these linkages.

8.4 Systems of interlinking practices at Bundagen and Murundaka

Using the interventions in practice framework (Spurling et al. 2013; Spurling & McMeekin 2015) to explore how practices, or elements of practice have changed quickly highlights the limitations of considering change or interventions within a single practice, or a single element in isolation. There are many connections and dependencies between the practices and elements within each community – see Figure 8-1 and Figure 8-2 for a representative map of many of the connections between practices and elements discussed in this thesis.

An example of food practices at Murundaka will help illustrate this idea. Someone living in the community could decide they want to eat more organic food. This may come about through subtle exposure to meanings about the environmental benefits of organic food which are widely discussed in the community (perhaps over a communal dinner), or exposure to another source, like watching a movie or TV show. They would find that this meaning, embedded in the cultural conventions of Murundaka, is shared by many in the community. In turn, this would represent further motivation to pursue that practice. As mentioned above, they would find that most of the material elements required to start growing their own organic food (as one way of eating more organic food) were already present, and accessible, within the community: there is space for planting seeds, compost available to fertilise, and equipment such as shovels, wheelbarrows etc. ready to use in the garden shed. There are however potential difficulties that may arise in the communal setting, as opposed to a private setting, as the use of garden space may need to be negotiated with the others already growing food.

In Murundaka there are also pathways to accessing the basic competences and skills that would be required to start growing vegetables. The person could attend one of the regular gardening bees or approach a member of the gardening group for advice about how to get started. This is not to say that the same process would not be possible outside of Murundaka, just that the process of re-

-
- Understanding what matters, what the enterprise of the community is, and how it gives rise to a perspective on the world
 - Being able (and allowed) to engage productively with others in the community
 - Using appropriately the repertoire of resources that the community has accumulated through its history of learning
-

crafting an existing practice by incorporating new elements, or of performing new practices, is made simpler thanks to the material and social networks and connections developed within the community.

Many other practices and elements not yet mentioned also have roles in facilitating the adoption of gardening practices: the foundational cohousing ideals expressed through the creation practice of the community led to the consolidated shared spaces which made room for the large garden; the different governance practices were crucial in establishing the vision for the garden space and fostering the social capital that helps lower the barriers to participation in a practice.

Spurling et al (2013) focus on the interlinking of practices of work, socialising and mobility, highlighting how the social organisation of work has significant impacts on transport for the community. They also note that while working from home is a growing practice which involves less transport use than travelling to and from a workplace, the limited social interaction involved is a potential barrier to it being taken up more widely. Here the arrangement of practices and elements at Murundaka is interesting. The community has some shared office space on site, although when I visited, that was being used as a guest room, with people more frequently working in the common room. Presenting an antidote to social isolation is a key factor in the use of communal spaces in cohousing, and the use of the common room as a 'co-working' space (or even the presence of the common room where people working from their apartment could potentially go for lunch) increased the likelihood of 'socialising' during a home-workers day.

Exploring the interlocking and sequencing of various practices highlights the importance of considering the temporal dependency of practice in interventions. A home-cooked meal requires more time than reheating a frozen meal or ordering takeaway, so the amount of time available to an individual will impact the practices that make up their 'lifestyle' (Middlemiss 2011). A great deal of time is spent working and commuting to and from work, for the most part, because of the need to earn money. Both communities provided cheaper than market-rate housing for the residents, either through capped rental or land-sharing arrangements designed to lower costs (see Section 8.5.2 for a further discussion of this). For several interviewees, these lower housing costs meant they could choose to work less, freeing time that other practices could 'use'.

A good example is self-sufficient food provisioning, particularly at Bundagen. The aim of becoming more self-sufficient for food requires time but can have an impact on a range of interlinking practices. Taking one step toward more sustainable food practices, and buying organic, costs more and takes up more income than buying non-organic. If people grow their own vegetables, however, they can reduce costs along with the amount they need to earn. Conversely, maintaining a garden

takes time, which can then impact on the amount of time available to work for an income. Allan shared these thoughts on the topic:

*I look at it this way. If I had to go and buy organic vegetables, they come at a premium, so if I'm able to produce organic vegetables, that's, it's a way of earning money for me, because by not spending the money, I'm saving the money and therefore I don't have to go and earn, generate... that's another aspect to living a sustainable lifestyle.
(Allan, Bundagen, 34 years)*

The co-existence of gardening and composting toilet practices in Bundagen lends a more practical significance to the meanings of toileting using composting toilets. If gardening was not an established practice in the community, reusing human waste to create usable compost would still be a valued concept, but there would be few tangible benefits. Instead, the compost created by the composting toileting practice, as well as composting of food scraps, provided a material input into the food provisioning practice. These practices and their evolutions then become interlinked in ways that are not encountered in mainstream society. When the composting practice is being performed effectively, the compost is an important fertiliser for the food practice⁶⁰ (as emphasised by John's efforts to transport his toilet compost to his new house). This organic (and free) fertiliser then becomes an element used in the growing of food, improving the productivity of the gardens and allowing community members to rely more on the food produced in their gardens. If the food growing practice spreads to other 'carriers', or if existing carriers expand their gardens, a heightened value for the material output from the composting toilets is produced. These links, between composting organic waste and food production, are not unique to Bundagen. They occur in mainstream regimes to varying degrees, with organic waste collected from sources such as wastewater treatment systems, farm by-products, household garden waste collections etc. which are then reused for food production. However, the cyclical nature of these links are remote and hidden from the view of the average household. At Bundagen however, the links between, say composting food and growing vegetables, are clearly apparent. Residents can grasp the interconnected impacts of their practices more clearly.

This description has focused on the interconnected web of food production, toileting and composting. However, as Figure 8-1 illustrates, the interconnections extend beyond these aspects. Food production at Bundagen is a fairly individual practice. However, the use of composting toilets is required by the community by-laws, which reflect the original principles of the community.

⁶⁰ Although only for food producing trees – human compost was not used for vegetables growing in the soil.

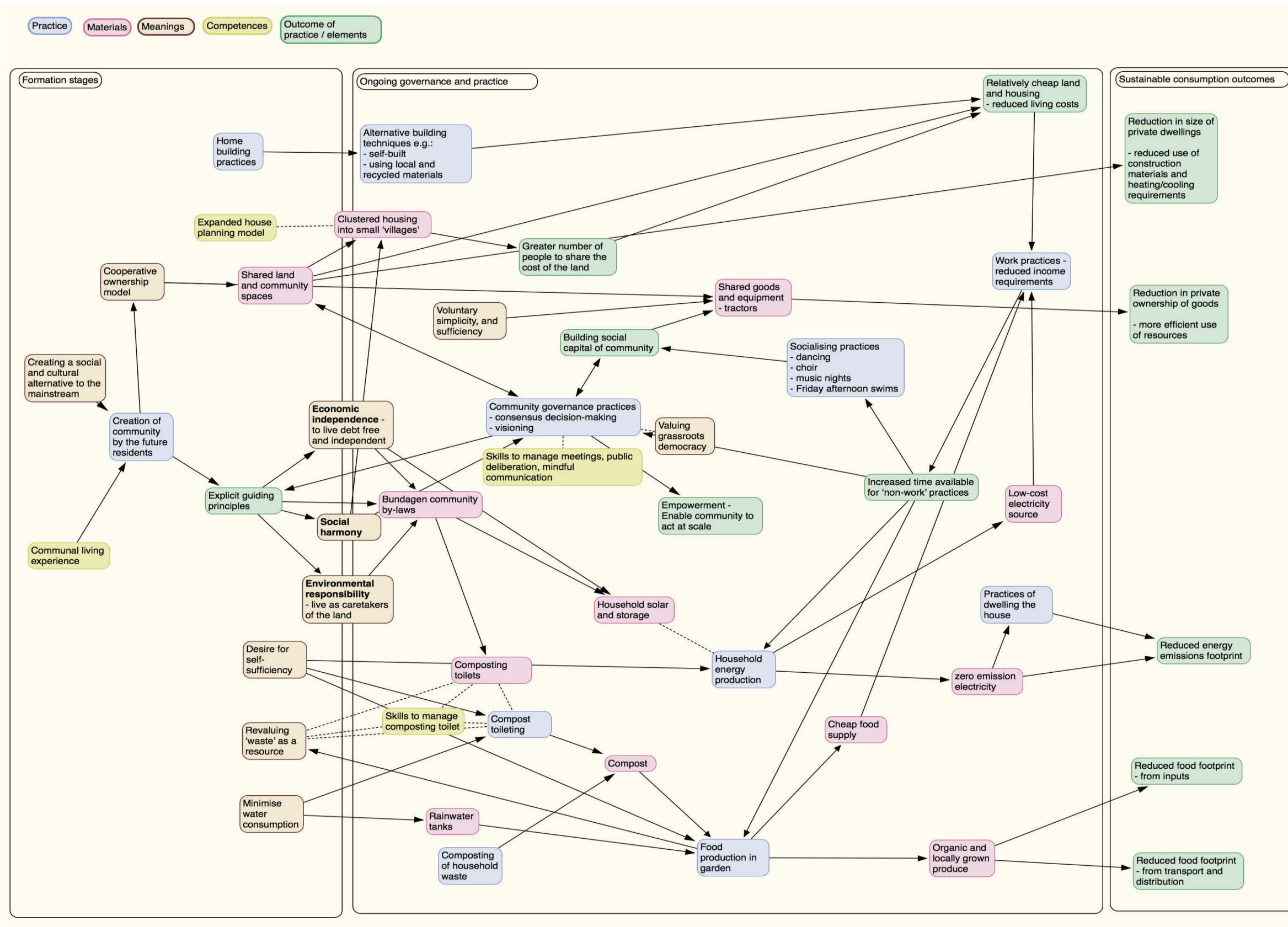


Figure 8-1: Diagrammatic representation of the practices and elements interacting within Bundagen (the dashed lines indicated elements linked to a specific practice).

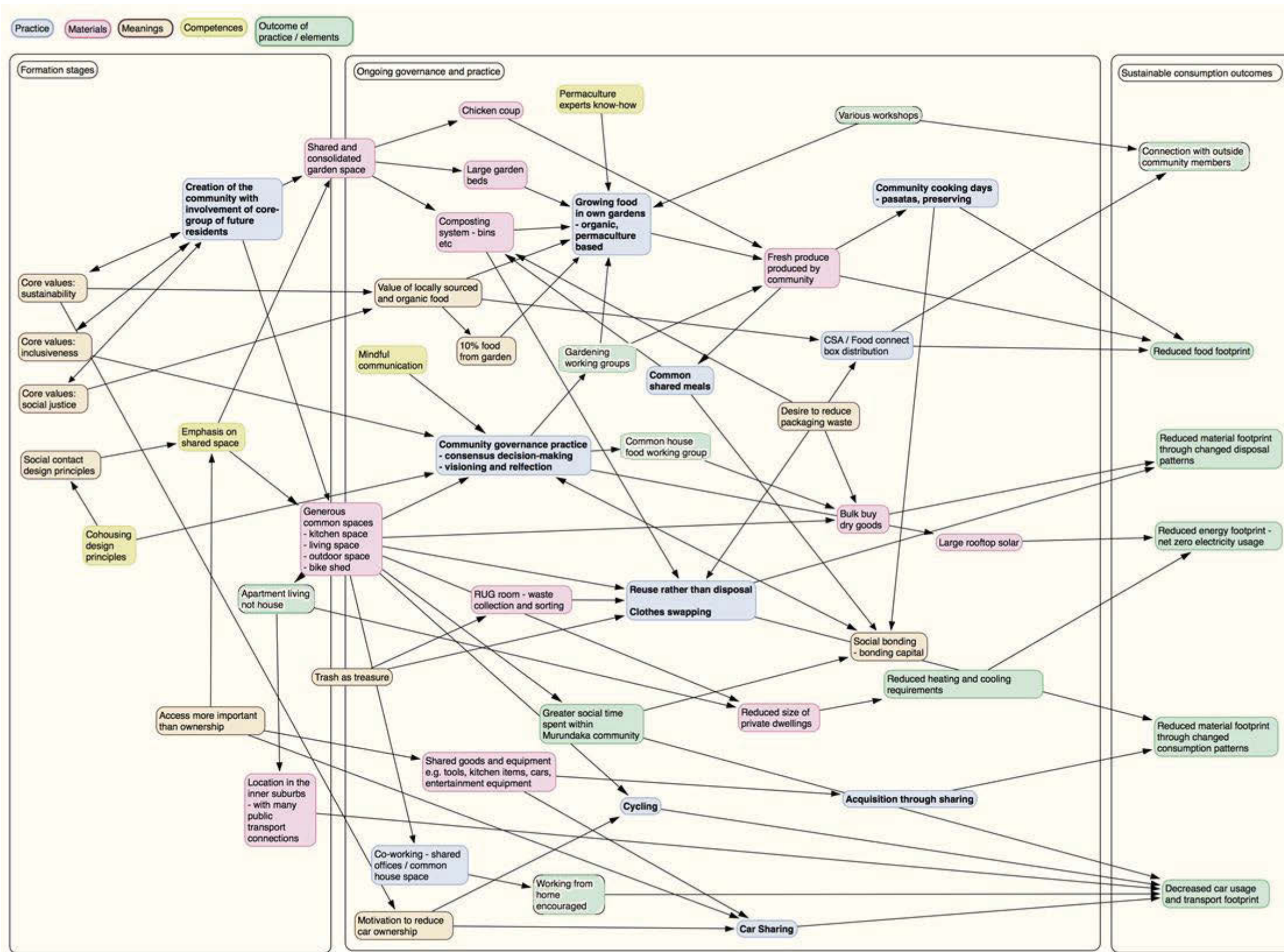


Figure 8-2: Diagrammatic representation of the practices and elements interacting with Murundaka

8.5 Practices for sustainability interventions

Section 8.3 explored the elements of practice and certain dynamics of these elements that shared some commonalities between the two case study communities. These were observable in both communities as contributing to the recrafting of everyday practice in more sustainable ways.

Section 8.4 looked at the interconnectedness between these practices and elements, highlighting the complexities of practice systems. The links between elements and practices make it difficult to intervene in any practice without having ripple effects through many parts of the systems.

The summary of the direct interventions for sustainable consumption in Section 8.2 noted that most of the niche community practices related to creating and governing community are not directly related to reductions in EF. However, these practices have a crucial role in enabling the community to act as policymaker and intervene on an ongoing basis within their ecosystem of practices. They allow the communities to act in an adaptive and reflexive manner, and to continuously re-align to the pro-environmental vision of the community. They contribute to community-building, enabling collective action and directing attention towards providing new systems of provision; this highlights the crucial role of building supportive and enabling institutions and infrastructures within sustainable consumption strategies (Seyfang 2009). The manner in which sustainability practices within the case study communities addressed aspects of the New Economics sustainable consumption frameworks were noted in Chapters 6 and 7, and are summarised in Table 8-4 below. This summary highlights the importance of the community creation and governance practices in enabling and supporting more sustainable elements to be integrated into the practice ecosystems of Bundagen and Murundaka in a reflexive manner. This will be discussed further in the next section.

Table 8-4: Sustainable consumption activities at Bundagen and Murundaka with reference to the New Economics framework (Seyfang 2009)

Indicator	Bundagen Cooperative Community	Murundaka Cohousing Community
Localisation	<ul style="list-style-type: none"> Localisation by increasing use of DIY and local materials – e.g. mudbricks Local electricity production Greater local food production -ve – limited businesses operating on-site – community farm sells externally rather than internally. 	<ul style="list-style-type: none"> Sustainability goal of Murundaka - <i>To be mindful of sourcing of food and other goods locally and to utilize cooperative purchasing</i> Grow 10% of food onsite, support CSA box delivery, promote cycling trips to the local markets -ve – limited information about the extent of localisation
Reducing ecological footprint	<ul style="list-style-type: none"> Ecological footprint survey indicated reduce EF at Bundagen. Key aspects included: <ul style="list-style-type: none"> shelter (home energy use and construction): Due to the usage of 100% renewable electricity in the community, and construction of generally small homes using natural, local or recycled materials food: Large amount of homegrown food consumption and significant number of vegetarian/vegans in the community, and goods: Generally low levels of material consumption and waste production 	<ul style="list-style-type: none"> Commitment in sustainability goals - <i>To minimise our eco-footprint, establishing policies and living practices that aim for zero +impact, sustainability and restorative living,</i> Commitment in sustainability goals - <i>To actively minimise our transport footprint, our dependence on non-renewable resources as well as reduce our energy use and waste</i> Shared spaces reduce the size of private household – more efficient used of household energy for heating and cooling (reduced kWh usage) Shared goods and equipment, Solar panels installed on the roof
Community building	<ul style="list-style-type: none"> Developing social networks around building the community / housing from creation and formation to the ongoing governance practices Low-cost, cooperative ownership model provides accessible housing 	<ul style="list-style-type: none"> Community building by developing social networks around developing the community / housing – regular meetings and events prior to moving into the development Design of the community structure creating inclusive and cohesive spaces for the members Participation in the community management is encouraged (required) through community meetings, sub-committees and retreats - building social capital through shared experiences encouraging participants to share experience ideas, creating a participatory and inclusive community experience
Collective action	<ul style="list-style-type: none"> Collective action – strong sense of acting collectively, enabling collaboration to make effective decisions about things that effect their lives Collective action – empowering people with groups 	<ul style="list-style-type: none"> An example of people collaborating to impact the type of home they live in (major impact on their lives), and establishing a new type of housing that helps to change the norm. Active citizenship within the Murundaka community can provide a practice that encourages action on a wider scale Creating a community group that enables collaboration to make effective decisions about things that affect their lives and engage with local government and public policy (through community creation and management) Collective action – encouraging participation in the Murundaka community – active citizenship Running workshops, tours and engaging with outside professionals to try to encourage the new norms of housing, gardening etc.

Indicator	• Bundagen Cooperative Community	• Murundaka Cohousing Community
New infrastructures of provision	<ul style="list-style-type: none"> • Providing an alternative system for the provision of housing • Cooperative ownership to remove speculation on land values • Residents as principal drivers of design and management of the community • Local solar energy (electricity) provisioning • New sewage system through composting toilets 	<ul style="list-style-type: none"> • Real world example (in Australia) of a new type of socio-technical housing infrastructure. The extensive shared spaces, design for social interaction and resident management is designed to prioritise environmentally and particularly socially beneficial development. Alteration of the existing system of housing provision by involving the residents in the design and management of the community

8.5.1 Reflexive governance and intervention

The governance of practices, and the idea that policymakers or planners can promote sustainable practices, is an area of ongoing discussion and research (Shove & Walker 2010; Spurling et al. 2013). Practices are always changing, so it makes sense to consider ways to guide them along more sustainable trajectories. However, Shove & Walker (2010) caution that practices often have emergent and unexpected trajectories, as the ripples of changes in practice or elements interact in unexpected ways.

Involvement by future residents in the participatory design of their community does not necessarily lead to a low-impact development that uses natural and locally sourced materials. Community governance of a neighbourhood does not directly lead to the reduced consumption of resources in the household; the community vision may focus entirely on social issues, ignore environmental issues entirely, or the community may make decisions in meetings that lead to detrimental environmental impacts. The reduction in car spaces at Murundaka, for example, could lead to residents parking in the streets⁶¹.

Literature on socio-technical transitions describes efforts to intervene to create social change as 'a reflexive process of searching, learning and experimenting' (Loorbach 2010, p.166). This is true whether the site of change is described as the socio-technical regime or interlinking systems of social practice. Shove et al (2012) describe effective policymaking as 'guiding processes of selection and variation, and about adapting to and reflexively monitoring emergent bundles and complexes of practices, as they develop' (p.161). Reflexivity is described by Grin et al (Grin, Rotmans & Schot 2010, p.233–4) as a type of reflection in which actors scrutinise not just a particular action, but consider the ongoing flow of conduct. This is an essential element in any attempt to intervene in practices.

⁶¹ For a cautious take on the positive characteristics of cohousing see Chiodelli and Baglione (2013)

Interventions should not be one-off occurrences; they should attend to all the elements of practice, as well as the ongoing processes of transformation, evolution and feedback within the circuits of practice reproduction, the way practices interlock and the institutions and infrastructures that maintain such arrangements. (Shove & Walker 2010; Spurling et al. 2013). Intentional communities like Bundagen and Murundaka are both intentional and reflexive, as evidenced by the codified vision statements, monthly meetings for all residents, and numerous sub-groups that focus on specific community issues. Whilst not conceptualised as intervening in practices, it can be argued that the practices of community governance in these communities are particularly appropriate for guiding the ongoing evolution of everyday practices within the community along a sustainable trajectory. At the same time, the creation of the intentional community provides a process for the community to intervene in the institutions and infrastructures that support certain arrangements of practice.

This suggests that interventions to encourage sustainable practice should not only focus on practices and elements obviously linked to resource consumption, but also other practices that act as enablers or disablers for pro-sustainability action within the constantly evolving plenum of practice. These include practices that connect households and provide spaces for observing performances of practices, and those that make connections between practices more obvious and visible. This concept will be considered further in the following chapter, which looks at the wider influence of intentionally sustainable communities.

8.5.2 The practice of creating a home and community: the foundation of grassroots sustainable housing

The intentional creation of a community like Bundagen or Murundaka is not a routine, every day, or even particularly common practice. This is clear when considered in relation to the number of communities that exist that are 'unintentional', that is they consist of people who now live together simply through the circumstance of buying dwellings in similar neighbourhoods. Yet, as discussed in Section 2.5, it is widespread, with over 3,750 communities listed globally on the Fellowship of Intentional Communities website (FIC 2015). Creating an intentional community involves many practices that would be recognisable to knowledgeable practitioners, and like any practice, there are identifiable elements that must be integrated for the successful performance.

For both the case study communities, the intentional creation of a community was instrumental in shaping the socio-technical context: the materials, the shared understandings and the knowledge in which the households would be situated. It was a performance of a bundle of practices which itself can be seen as an intervention in a whole system of housing practices. Macrorie, Foulds and Hargreaves (2014), in a related study, explored the experiences of housing professionals delivering new, low-carbon housing. They described policies and practices of low-carbon housing as an

intervention in a whole system of practice, one that includes 'the working practices of housing professionals, outcomes of the design and build process, and interrelations with householders' dwelling practices' (p.96)⁶².

The experience of the foundational community members of Murundaka and Bundagen (and many intentional communities) can be seen in a similar way, with the community members both intervening and participating in practices of planning, designing and (in the case of Bundagen) building, that would normally be performed by housing professionals who weren't intending to live in the places they worked on. This will be explored further below, in the context of the Australian housing system, including a brief comparison with mainstream speculative community developments and 'unintentional' neighbourhoods.

All intentional communities have some form of shared meaning that influences the way they are formed, as they consist of a group of people that 'have voluntarily come together for the purpose of ameliorating perceived social problems and inadequacies' (Metcalf, 2004, p. 9). In contrast, mainstream neighbourhoods are 'accidental' in terms of the group of people they encompass. In Australia, neighbourhood-style development (either apartment blocks or suburban developments) and most housing production, in general, is 'dominated by private for-profit development and construction companies oriented toward market-rate production and commercial output' (Crabtree 2016, p.2)⁶³. Self-built homes accounted for 40% of all homes built in 1954, but less than 10% by 1993 (Dingle 1999). The ultimate meaning is to make a profit from the business of building housing. Intentional communities are often associated with the idea of utopianism (Metcalf 2012), of striving to create an alternative and better world. As such they are seeking to 'live beyond the bounds of mainstream society by adopting a consciously devised and usually well thought-out social and cultural alternative...' (Metcalf 2004, p.9). In this way, they can be seen as a form of critique of the dominant culture (Kunze 2012). The specific details of the social problems to be addressed, and the alternative proposed, can vary widely. They can, and do, range from extremely religious to atheist communities, from focusing on environmental, social or economic issues (Meijering, Huigen & Van Hoven 2007). In most cases, communities seek to address several issues. This was true of Bundagen and Murundaka, as could be seen in their guiding principles and visions (saving land from overdevelopment, creating a socially and environmentally sustainable community etc.).

Intentional communities often have specific understandings of ownership, and therefore legal structures. These are closely linked to maintaining economic affordability. This was the case with

⁶² Housing professionals included designers and architects, construction teams, social housing landlords and project managers.

⁶³ The main exceptions to this are architect designed homes, most home renovations and self-build houses, however these are a minority of housing production

both Bundagen and Murundaka, being full equity and common equity cooperatives respectively, as compared to the freehold or strata title ownership common in mainstream Australian housing. Historically, cooperatives, company title and trusts have been the most common legal form amongst Australian examples of intentional communities (Fisher 2004 cited by Crabtree 2016). Bundagen is a rural land sharing cooperative, which means the land is owned by the Bundagen Cooperative. It would now be classified as a Rural Landsharing Community, a type of development zoning that allows multiple homes on a single lot of land. This type of development was formalised under the NSW *State Environmental Planning Policy No 15 – Rural Landsharing Communities 1988*. Designed to encourage affordable, low-impact living, the policy was implemented after many intentional communities in NSW had already been formed (Crabtree 2016). Murundaka is different, with the land title being held by Common Equity Housing (CEHL), with the members of Earth Cooperative owning shares that confer residency rights but hold only nominal value (Crabtree 2016). The rent that households were charged was below market rent and indexed to residents' incomes. The legal structure of these communities was instrumental in creating these conditions, and the affordability of housing influenced many aspects of household practice in the communities.

The material elements of an intentional community include the places in which the community can be located (the land) and the spaces on the land in which community can occur, as well as the people that are going to become members. This does not differ greatly from the materials required for any mainstream housing community. Many scholars and practitioners would argue that the provision of shared, communal spaces (often a common house of some kind) and material property for the community members to use are also essential material elements (e.g. McCamant and Durrett 2011). As previously mentioned, this serves a practical purpose as space that all members can use to meet and interact. Perhaps more important are the symbolic meanings that are attached to the shared spaces, as physical representations of the sharing nature of the community. McCamant & Durrett (2011) also emphasise the role played by the design of the community and the shared spaces in creating opportunities for social contact between community members.

Murundaka and Bundagen represent different approaches to materialising an intentional community. In Bundagen, competences of community planning and building came from all members, with some members bringing specific professional knowledge. Household members were ultimately responsible for their own house design and construction, although there was a great deal of oversight and approval of designs from village and community members. Some people in Bundagen hired professional builders, whilst many built their own homes, continuing a long, but declining, tradition of self-built housing in Australia (Crabtree 2016). In both instances, many alternative building materials were used (mudbricks, recycled materials, natural local timber etc.). With Murundaka on the other hand, once some design guidelines about the use of cohousing

principles had been understood and agreed upon, a professional building company drew up the plans and constructed the community using the competences and know-how required in most housing construction work. To different extents, both communities had influence over the materialisation of their community in a way that reflected the visions and goals they held.

As already mentioned in Metcalf's (2004) definition, the members of an intentional community are generally seeking to live in ways that are different to mainstream society. Therefore, they are often created in ways that challenge norms and rules of mainstream society, and doing this requires certain competences. There are competences involved firstly in turning the ideals and principles of a community into a working plan, or vision of that community, and then in turning that vision into reality.

The specific competences required will vary in each given situation, but the creation of an intentional community invariably involves negotiating the existing legal, planning and financial frameworks to create a community model and structure that firstly allows the community to exist, and secondly matches their principles. As intentional communities generally involve working together with other members of the community to make decisions about the creation and ongoing operation of that community, competences are also required to create and maintain a functioning governance structure that allows the community members to live, work and make decisions collaboratively. Other intentional communities (other performances of this practice), and community networks are extremely important in this regard. In both Bundagen and Murundaka, the founding members had previously lived in, or spent extensive time visiting, other intentional communities, and so brought with them know-how based on that experience.

Both within Australia and internationally there is a rich history of intentional communities, with many experiences to share. National and international networks (of varying degrees of organisation and structure) such as Cohousing Australia, the Global Ecovillage Network, the Fellowship of Intentional Communities provide a means to share competences between various existing and forming communities. In Australia, sporadic meetings of members of intentional communities such as the Australian Intentional Communities Conference⁶⁴ are important gatherings for such purposes.

The practice of creating a community or home is effectively a substitute for the traditional practices of buying a home on the open market. Alternatively, it could be seen as shifting the performance of this bundle of practices from developers to individuals who will live in the community. Different variants of this practice can be seen in other alternative housing models like deliberative

⁶⁴ <http://www.aicconference.com/>

developments⁶⁵ and Baugruppen (Hamiduddin & Gallent 2016). Like the cohousing and intentional community models, these models give residents much greater input into the design process, creating an opportunity for the 'reconceptualisations of the relationships between prospective residents, designers, providers, and builders' (Crabtree 2016, p.11). There has been increased attention given to the benefits of reducing the role of developers in delivering housing (Sharam, Bryant & Alves 2015b). The New Economics approach to sustainable consumption, introduced in Chapter 2, describes building new systems of provision as one of the most important outcomes of collective action. The shift of housing provision from speculative to deliberative development can be described as an articulation of a new structure of provision (Sharam, Bryant & Alves 2015a). This creates an opportunity for new infrastructure to be created based on alternative conceptions of value, perhaps 'enabling people to behave as ecological citizens' (Seyfang 2012).

8.5.3 *Governing community*

The bundle of practices involved in governing a community provide processes for community interventions aimed at sustainability to extend beyond the formational stages of the community, and attend to the ongoing processes of transformation, evolution and feedback within the circuits of practice reproduction (Shove & Walker 2010).

This section will highlight some of the key aspects of this practice enabling sustainable interventions in everyday practice, including community scale action.

Community-scale action and empowerment

The community-level participatory governance structure appears to influence the scope and mode of intervention in practices available to the community. The first aspect of this is that by operating on a community scale, the scope of potential actions is greatly increased. This can mean that material issues are more easily addressed; the installation of solar panels that are shared by 18 apartments at Murundaka for instance, an intervention that is described as being historically difficult to coordinate in Australia (Sturmberg 2017). Waitt et al (2012) found that detached households had higher rates of sustainability practices than those in units. They note arguments by Gleeson (2008) in favour of the suburban form over higher density units. Gleeson states that higher density housing commonly requires high cost and energy consuming goods along with services like lifts, swimming pools and property lights. They also describe how strata laws and the need for consensus limit the ability of those in large co-habiting housing environments to 'reshape the systems, practices and habits surrounding waste management and utility use in apartment blocks' (p.66). Murundaka has a low-rise apartment urban form, and with 35-40 residents, it is likely the same scale that Gleeson was referring to. Nevertheless, in Murundaka there were a number of

⁶⁵ E.g. Nightingale housing in Australia <http://nightingalehousing.org/>

examples of the community reshaping systems and practices of utility use and waste management. This indicates the potential benefits of the communal governance structure to enable greater autonomy, compared with strata governance arrangements⁶⁶. Adamson and Bromiley (2013) note that community empowerment is much more effective when members can see changes that result directly from their participation in a process. Every member (or adult member at least) plays an active role in the decisions of the case study communities, which creates agency and the potential to act on a larger scale than would be possible in individual households.

The literature discussed in Chapter 2 noted the limited agency of individuals to change the socio-technical system which provides the context for the performance of everyday practices (Hielscher, Seyfang & Smith 2013; Sustainable Development Commission 2011). Chatterton (2013) states that the shift of decision-making from the individual to community level is important because it moves the onus of responding to climate change away from the individual. The examples discussed in this chapter provide evidence of the case study communities acting collectively to shape the infrastructure which guides their everyday practice, which Seyfang (2009) argued is a key indicator of sustainable consumption. The idea of community empowerment as a key outcome of cohousing communities was explored by Meltzer (2005) in his research. It is also supported by Murundaka resident Delphine, who indicates she felt a sense of empowerment present in that community:

as a community we can take big decisions, we've got greater impact, we can make bigger things happening (Delphine, 5 years)

Stevenson (2016), states that citizens involved in deliberation 'have been shown to have a significantly higher level of ambition than most political leaders have displayed' (p.69). Participatory decision-making and strong democratic principles are described as common features of successful grassroots initiatives, where members are motivated and empowered by the openness of the process of community governance (Grabs et al. 2016).

Collective decision-making

Both case study communities had an established community-level governance process. As part of this process, both used modified forms of consensus decision making at the regular whole community and sub-committee meetings⁶⁷. Both communities had a process which allowed for various scales of majority voting to occur should a true consensus decision not be reached. Consensus decision-making then describes the process used during meetings, whilst not always reflecting the eventual outcome (Renz 2006). Although both communities had provisions to make decisions even if consensus could not be reached, the value of deliberating until a consensus could

⁶⁶ Strata typically have an elected executive committee of the owner's corporation, in which not all owners have equal voting rights (Randolph & Easthope 2007).

⁶⁷ The decision-making process at Bundagen was outlined in Appendix G

be reached by the community members was emphasised. The process can be described as a form of deliberative decision-making, in which proposals are presented and discussed by the community with the aim of achieving an agreement by consensus on how to proceed with the proposal. Deliberation is commonly defined as 'debate and discussion aimed at producing reasonable, well-informed opinions in which participants are willing to revise preferences in light of discussion, new information, and claims made by fellow participants' (Chambers 2003, p.309). Many community members commented on the frustrations that could arise during community meetings, such as the length of time required to allow everybody to speak on issues. At Bundagen it was very rare to get over half the community members in attendance at any one meeting. Nevertheless, the regular participation in discussions with fellow community members about issues of common interest was an integral practice in both case study communities.

Community governance practices were important for the social cohesion and group identity of the communities. It provided a reason for community members to come together, both for the formal event of the meeting, but this also could be seen to have importance for informal socialising, over lunch in the community hall prior to the meeting or coffee afterwards, for instance.

Stevenson (2016) citing Niemeyer (2004) states that evidence suggests shared understandings (meanings) on values and preferences about contested issues can be built between individuals through deliberative discussion. Participants in deliberations report significant learning through engaging with different perspectives. Although the communities share common goals, they do not lack differing perspectives between members. The community meetings provide a forum through which meanings and, to some extent, competences can circulate throughout the community.

Importantly from the perspective of encouraging sustainable consumption practices, studies of deliberative processes suggest there is reason for optimism that they will result in more 'ecologically rational' outcomes. The reasoning goes that ensuring a healthy and sustainable environment is '*the generalizable interest par excellence*' (Dryzek 1987, p.204, emphasis in original) and the aim of reaching a consensus (or eliminating objections that would halt consensus) preferences decisions in the generalizable interest.

Participatory visioning

A common vision is crucial for the success of an intentional community. Metcalf (2012), reflecting on what led to success, found that 'the key factor was not that members agreed on everything, avoided conflict, or even liked each other, but that they shared a common vision'. The process of collective reflection and visioning is a practice that is not usually performed by a group of households sharing a neighbourhood or apartment complex. It was an occasional practice that was

performed within both communities, however, and was important in formalising the significance of environmentally sustainable living goals within the communities.

The impacts of visioning practices can be summarised as follows: they encourage the expression of pro-environmental and social aspirations, promote circulation of meanings amongst residents, and allow meanings to be formalised and community members held to account.

In both Bundagen and Murundaka, many residents came to the communities during the formation period carrying meanings related to environmentally sustainable living, such as an aspiration to live a low-impact lifestyle. The early visioning processes provided an opportunity for sharing these meanings among all residents, and a means of adopting them as inscribed community goals. Even in cases where residents are less predisposed to pro-environmental ideas, there is evidence that deliberative, participatory community-based processes are effective ways of emphasising pro-environmental and pro-social values (Jackson 2005b; Stevenson 2016).

This visioning process provides an opportunity for each community member to reflect upon some of the meanings they carry, that normally sit within their practical consciousness and are expressed in everyday practice. Capstick et al (2014) suggest that the 'drawing out' of deep-seated principles and values may be one of the most effective ways to promote pro-environmental behaviours. By setting aside a couple of days to reflect and discuss with other community members their aspirations and ideals, participants bring these meanings into their discursive consciousness. As Giddens (1984) explains, 'actors are not inherently engaged in existential reflection on the meaning of their conduct from moment to moment in everyday life' (p.134). Only at certain times does discursive consciousness emerge, but it is at these times that 'actors mobilize their efforts and focus their thoughts on responses to problems which will diminish their anxiety, and ultimately bring about social change' (p.134-5). As Spaargaren and van Vliet (2000) suggest, once certain meanings have been attended to in discursive consciousness, they can then become significant meanings in the practical consciousness of everyday practice performance.

The vision process therefore allows the community to collectively, and publicly, arrive at a place where they establish community aspirations (meanings) about living in a sustainable, or environmentally conscious manner that they can publicly identify with. This is a vital step to reach in the visioning process (Grabs et al. 2016). These meanings can then become encoded in the formal rules and regulations of the community, taking on material form, such as posters in the Murundaka common house. In both communities, this created an environment in which meanings of sustainability could be challenged, and competences relevant to various everyday practices be shared throughout the community. The removal of the taboo on challenging the wasteful lifestyles

of households⁶⁸ in industrialised and industrialising countries is described as a crucial step in allowing changes such as the decarbonisation required in response to climate change (Schellnhuber et al. 2011). There is great value in not just encouraging sustainable practices, but being able to discourage unsustainable practices and elements, to try to remove 'bad' elements from circulation.

8.6 Summary

The chapter has addressed Research Question 3, the first part of which asks why the practices and elements of Australian intentionally sustainable communities differ from mainstream communities?

Essentially, as described in Section 8.3, the practices and elements of the case study communities differ from mainstream communities because their members have deliberately intervened in many ways to make them different. The residents of Bundagen and Murundaka have been very involved in designing and implementing policies that shape the elements of their daily practices, from the early creation of their community visions, designs, and infrastructure (particularly in the case of Bundagen) to the ongoing community governance structures.

Scholars have noted the issues that arise when assessing whether interventions have had an impact on sustainability, and if there is a causal relationship between those interventions and an apparent effect given consumption is woven through the fabric of everyday life in multiple and complex ways (Keller, Halkier & Wilska 2016). To deal with this dilemma, Keller and Vilhaelmm (2017) suggest evaluating interventions in terms of provisional stability. From this perspective, the practices that emerged as significant to community members are of interest, as these are the practices that have survived and evolved with the community; recruiting enough carriers and forming enough links between elements to achieve at least a provisional level of stability.

To address the second part of RQ3 (*What is the role of the intentional community in governing any interventions into the sustainability of these practices?*) the interventions in practice framework (Spurling et al. 2013; Spurling & McMeekin 2015) was drawn upon to consider the community members as both practitioners and policymakers of their everyday lives. By doing this, I was able to explore aspects of how the intentional communities had intervened to improve the sustainability of their practices through changing: i) elements of practice, (Section 8.3), ii) connections between practices (Section 8.4), and iii) the introduction or substitution of reflexive governance practices (Section 8.5)

⁶⁸ Examples of people challenging wasteful practices in Murundaka included discussions about how to use 5 different bins for sorting waste, or challenging the purchase of single-use cling wrap for the common kitchen.

The sub-questions went into more detail, asking how the practices and elements differ. Section 8.2 summarised the understanding already gained from the description and analysis of Chapters 6 and 7. Table 8.2 indicated the sustainable practices that had replaced less sustainable ones and where elements had been recrafted to improve the sustainability of certain practices. The use of practice theory to look at everyday behaviours allows the complex interactions between the elements of practice to be foregrounded, and highlighted some interesting changes in the elements of everyday practices. Some of them can be seen as more directly linked to reducing the EF of the communities, such as:

- reduced size of private households,
- reduced private ownership of goods through sharing,
- greater local food production,
- greater reuse and proper recycling of waste,
- renewable energy generation from solar panels,
- water tanks in the garden,
- prioritising low-consumption lifestyle (voluntary simplicity)

The range of interventions evident within both case study communities was quite comprehensive, as highlighted in Table 8-2. The interventions in mainstream practices and elements had an impact across the range of priority areas for sustainable consumption.

Sections 8.3 – 8.5 highlighted many ways that the community had been able to introduce and encourage certain elements to circulate rapidly within the community (visioning, co-location of daily practice), creating conditions that allowed the communities to address other aspects of sustainable consumption (Seyfang 2009) such as community building (social capital, supportive and trusting environments), enabling collective action (community governance structures) and creating new systems of provision (deliberative development of communities) more compatible with the sustainability goals of the communities. A final key aspect was the reflexivity that the community creation and governance practices gave the communities, enabling them to attend to the ongoing evolution of emergent everyday practices within the community, ensuring their sustainable trajectory.

Frantzeskaki et al (2016) state that the role of local civil society initiatives is to 'pioneer and model new practices that can then be picked up by other actors (e.g. policy makers)' (p.42-44). This chapter has highlighted a diversity of elements and practices that could be picked up. It has also highlighted the many different aspects of the systems of practice that exist within these communities, as well as the difficulty of selecting specific practices as models for policymakers. The next chapter will take an analytical step outwards, to focus on intentionally sustainable communities (and in particular

Murundaka) as a local grassroots initiative, and consider how it may be influencing sustainable practices outside of the community, within mainstream society.

Chapter 9. Influencing sustainable household practices on a wider scale

9.1 Introduction

To this point, this thesis has focused on practices of sustainable consumption within the niche of intentionally sustainable communities, and more specifically the case study communities of Bundagen and Murundaka. Chapter 8 discussed the ways that intentionally sustainable communities influenced the practices of the residents, using the interventions in practice framing. This chapter explores intentionally sustainable communities as niche projects, potentially influencing everyday practices on a scale wider than simply the residents and members of their communities. This is a relevant question to consider, as residents within both communities discussed their desire to influence sustainability practices on a scale wider than the boundaries of their communities. Whilst this sentiment was present in both case study communities, this chapter will focus specifically on Murundaka, and how it has and could in the future influence sustainable consumption practices on a wider scale.

The chapter will be structured as follows. Firstly, the justification for focusing specifically on the wider influence of Murundaka will be explained, and key pathways through which Murundaka engaged with the wider community will be outlined.

Following this, secondly, the interventions in practice framing will be used to explore ways in which Murundaka may be directly influencing sustainable consumption practices of the wider community (Section 9.2). This will be followed by a discussion of the pathways through which Murundaka or similar communities can influence the professional practice of those who have a role in 'making and shaping infrastructures' that are elements in many practices (Shove, Watson & Spurling 2015), and therefore have an indirect influence on community practices (Section 9.3). Next, the analysis will return to the transitions concepts of grassroots innovation and strategic niche management (SNM), first introduced in Chapter 2, to consider Murundaka as a niche project trying to influence the wider socio-technical regime (Section 9.4). This is a perspective that can bring some valuable insights when considering the diffusion of innovations from niche sites. The final Section 9.5 will draw together the analysis of the chapter and consider ideas for the more effective spread of sustainable consumption from intentionally sustainable communities.

Figure 9-1 illustrates the concepts of different interaction and potential influence pathways for Murundaka, or similar communities. Murundaka can be understood as a crucible of innovative practice; as a site of experimentation in both different forms of community development, and

sustainable everyday practices. Murundaka is located both within a specific local planning and development context (the local government area), and within a wider spectrum (or ecosystem) of practice; these have been grouped together under the umbrella term of 'local context'. Murundaka is both influenced by and can influence (to some extent), this local context. Murundaka, and the local context, is embedded within a 'broader context'. This is again used as an umbrella term referring to a broader state and national planning and development context and a wider spectrum of mainstream practices. The broader context influences the local context (and vice versa to some extent) and influenced the creation of Murundaka. The spectrum of practices within the local and broader contexts are conceptualised as a non-specific, 'mainstream' practice spectrum, whilst recognising that there will be some distinctive elements specific to the local context in which Murundaka is located. The odd shape of Figure 9-1 emphasises that the 'spread' or 'outline' of the local and broader contexts are not clearly defined.



Figure 9-1: Schematic of the conceptual framework of Murundaka within local and wider contexts. Contexts refers to both the planning and development regimes, and the spectrum of mainstream practice

9.1.1 The analytical focus on Murundaka influencing wider consumption practices

There were a number of reasons why this focus was chosen. Firstly, members of the Murundaka community explicitly discussed their intention to effect wider change. As one of the founders Giselle noted, a critical reason that the community was built in the suburbs of Melbourne was a desire to create an 'exemplar' showing what was possible in terms of living a sustainable lifestyle in the suburbs, as a response to climate change and the climate emergency (2017, pers. comms., 24 June).

A poster created by Murundaka and displayed on the wall of the common house describes the community as 'planting a seed of change':

Murundaka residents hope that our community is a 'seed' that demonstrates the social and environmental sustainability of cohousing in all its forms. We are keen to offer our experience and resource to support such projects, and to connect and share with others working for change in our local community and elsewhere. (Murundaka Cohousing n.d.)

A second, related point, was that the suburban location and urban form of Murundaka means it represents a possible exemplar for urban community sustainability that is relevant to a larger proportion of the Australian population than Bundagen. Australia is a highly urbanised nation, with major cities being home to over two-thirds of the population and growing faster than regional or remote areas (Australian Bureau of Statistics 2008), so interventions and adaptations within cities are a vital focus area.

Thirdly, Murundaka was connected to the wider community in a number of ways, from hosting public open days and running community workshops in the backyard, to running study tours for researchers and planning, housing and urban development professionals. Along with this, it is in some ways a hybrid community, representing a combination of community direction along with government and community housing input⁶⁹ (Crabtree 2016). These links between the grassroots niche and the mainstream regime indicate that Murundaka is to a certain extent intermediately situated between the niche and regime, and therefore well placed to influence the translation and adoption of alternative practices by the mainstream (Seyfang & Smith 2007). These pathways through which influence could spread are discussed in more detail throughout this chapter.

Bundagen was connected with the wider community in many ways as well. They had held a weekly 'café' in the main common house that was open to the public, although by 2017 this had been halted for public liability reasons. The public was also welcome to camp within the Bundagen grounds if that was appropriately organised. However, there was an ongoing tension within the community between those who thought Bundagen should be extending its influence and those who were happier to remain discrete. Historically, not all dwellings had received proper building approvals, and whilst there was an ongoing effort to bring all buildings up to the right standard, there was a sense amongst some in the community that the less interaction with planning, housing and urban development professionals, the better. This was a key factor in choosing to focus this chapter on Murundaka and not Bundagen.

⁶⁹ Other examples of these kind of hybrid communities are Pinakarri Community (Western Australia) and BEND (NSW)

A fourth key point about Murundaka was that they had kept records of many of these formal interactions with the wider community, which made it possible to contact and interview a number of the professionals described above. Finally, the logistical realities of conducting research with communities that are 1,500 km apart meant that focusing on the wider influence of one of the two case study communities was more compatible with the research schedule.

Although there are multiple reasons why Murundaka was more appropriate for this analysis, attempts were made to contact members of the local government area in which Bundagen is situated to discuss interactions with the community, but no responses were received. This is likely to be reflective of both the lesser interaction between the community and the local government as well as the age and stability of Bundagen. It would be much more difficult to identify or contact any professionals familiar with the formation of Bundagen 35 years ago, compared with Murundaka. For these reasons, Murundaka will be the focus of the rest of the chapter. The next section will first describe the engagement that Murundaka has had with the wider community.

9.1.2 *Engagement with the wider community*

Murundaka has been very open and engaged with the wider community since it was founded. It has attracted attention from a diverse group of interests, from documentary filmmakers and mainstream media organisations to industry and government professionals and universities. To a large extent, it has embraced a role of showing the broader community 'how it is possible to share resources and thus minimise waste and consumption while still maintaining privacy and autonomy' (Foyster 2014b, p.6). An application the community prepared for a Banyule Council sustainability award listed partnerships with over 38 separate organisations (Foyster 2014). Heidi described Murundaka's engagement with the wider community:

So I think that one other aspect... is the amount of outreach that we do as a community, or as a couple of individuals. Like she [Mikoto] does so much with the Transition networks and permaculture groups, and we are constantly having small and large groups of really passionate, highly skilled, highly engaged, you know, people who want to see the transition, they want to make it happen. And they congregate here (Heidi, Murundaka, 6 years).

This has taken many forms, as can be seen in the range of outreach and engagement activities that Murundaka is involved in on a yearly basis, summarised in Table 9-1.

Table 9-1: Examples of Murundaka community engagement with the wider community from September 2013 to September 2014 (Foyster 2014b)

Community / householder engagement	
Workshops	Planter box wicking bed workshop Compost bay workshop (funding from Banyule Council grant) Growing Asian vegetables workshop (funding from Banyule Council grant) Rocket stove workshop (funding from Banyule Council grant) Irrigation workshop (funding from Banyule Council grant) Edible weeds workshop (funding from Banyule Council grant) Soba noodle (buckwheat) making and Sotai (Japanese foot massage) workshop
Hosting for community groups and organisations	Common meals and fundraising events for Urban Coup and Banyule Cohousing Meetings of Cohousing Australia Meetings of Sustainable Living Foundation Board Distribution hub for 'Eaterprises' seasonal organic veggie boxes
Events	Sustainable Living Festival Open Day Banyule peak-hour transport race (reported in Heidelberg Leader) Seven Positive Sustainable Solutions Talks (PSST) about community, history of co-operatives, sustainable food, the climate emergency and others; two community info sessions Neighbourhood House Concert Local drop-off point for Home Harvest Feast 2014
Professional engagement	
Research & University engagement	Tour and workshop with University of Melbourne Architecture students Tour and workshop with University of Melbourne Sustainability students Interview and workshop with Matthew Daly, PhD student University of Technology Sydney Site visits for permaculture design students
Government & industry engagement	Tour with community development team, positive ageing team and councillors from Nillumbik Shire Council Tours for consultants and developers, including Village Well and Places Victoria Informal waste working group with university and local government representatives

The various engagements with the wider community roughly focus on five different areas: encouraging cohousing and alternative types of development; teaching concepts of sustainable

living; sharing food production and consumption practices; transport practices; and waste disposal and reuse.

The table above has been broadly separated into two sections: engagement with people with a professional interest in Murundaka Cohousing community, and engagement with community groups and local householders. There is a developing interest in the roles of professionals in shaping some of the social and physical infrastructures of everyday practice (Shove, Watson & Spurling 2015), and this will be explored later in this chapter. The next section will examine the interactions with the wider community as practice interventions.

9.2 How does Murundaka influence sustainable practice on a community scale? (Direct influence)

The previous chapter considered the community members as both practitioners and policymakers, shaping their everyday practices in a sustainable manner. This role changes when considering interventions outside the community, with the residents no longer having any significant status as 'policymakers'. Whilst the community still has the vision to spread sustainable consumption practices on a wider scale, the ambition to 'plant the seed of change' in the local community and elsewhere recognises that the scope for intervention is different on that scale. The idea of the case study communities as crucibles in which new, more sustainable arrangements of everyday practice were tested and formed was introduced in Chapter 8. Yet they can also serve as containers that limit the diffusion of practices and elements, or the conduits through which they can flow (Shove, Pantzar & Watson 2012). Therefore, the success of an intentionally sustainable community in planting the seeds of change could be considered to depend on the extent to which it either contains or promotes the spread of practices and elements to carriers outside of the community.

The modes of practice intervention introduced in the previous chapter provides a useful frame for exploring the pathways through which Murundaka has attempted to change the ecosystem of practices within the wider community. This section will explore some of these pathways for influence or intervention. Assessment of the success of any of these pathways for influence is only tentative and partial, as the research did not collect data from those that Murundaka is trying to influence. Instead, the focus is on documenting the pathways that have been established and highlighting examples of circulating sustainable forms of elements, recruiting new carriers to certain sustainable practices, and/or changing connections within wider systems of practice.

9.2.1 Interventions in community practices: Murundaka as a seed for change

This section aims to link the wider community engagement discussed above (See Table 9-1) back to the spread of sustainable practices and elements from these communities.

Taking a practice approach to look at a community such as Murundaka as a 'seed of change' within the wider community continues to place a significant focus on the constituent elements of practice. As Shove et al (2012) describe, practices-as-performance are necessarily localised to a specific place and context, whereas the elements of the practice-as-entity can and do travel. The various modes of circulation for elements were introduced in Chapter 3. Materials can be physically transported, or ways of accessing them can be changed. Competences spread through processes of abstraction and reversal of abstraction, lateral migration, and creep between practices. Meanings spread through processes of association and classification (or the reverse).

Drawing on the interventions in practice framework (Spurling & McMeekin 2015) leads to a number of considerations. For Murundaka to intervene through the *re-crafting* of resource-intensive practice in the wider community involves the spread of one or more elements, to be adopted into practice outside of the community. *Substituting practices* suggests discouraging unsustainable practices for more sustainable variants (Spurling & McMeekin 2015), or, as explored in Chapter 8, perhaps recruiting participants into a practice that they previously would not have performed (e.g. becoming involved in the deliberate development of a community). Shove et al (2012) summarise sociological research highlighting how new recruits become initiated into practices through the acquisition of practical competences, arising from 'first-hand, embodied experience' (p.69). This concept of legitimate peripheral participation and situated learning, gaining skills as well as an understanding of the material elements and associated meanings are key to how practices recruit practitioners. *Changing how practices interlock*, draws attention to practices that may not be specifically unsustainable or sustainable, but may bundle together with other resource-intensive practices in interesting ways.

Macrorie et al (2014) argue that recrafting of practice is unlikely to succeed without accounting for the impact on wider systems of practice. Therefore, any attempt to intervene in practice by 'would-be governors of practice' (p.108), whether professionals and policy-makers or communities looking to have a wider influence, should pay attention to how 'practices interrelate, feedback and might spin off as part of more extensive systems of practice' (p.108).

What was clear in the discussion of practice interventions in the previous chapter is that any process of classifying elements, practices or interventions is necessarily reductive, and the delineation between the categories can become blurred. This is perhaps most obvious with considerations of

recrafting elements of practice, with a change in a material element (for example), very likely to also be linked to some shift in competences or motivating values with which it is associated.

This section will look at the ways in which the Murundaka community was trying to intervene in the practices of the wider community (referring back to Table 9-1). In this case, given that the wider community is outside of the scope of direct governance of the community, 'interventions' refers to efforts to spread practices or elements (acting as a conduit for more sustainable arrangements), or change those in the wider community. It will consider the different domains of practice as outlined in the case study chapters.

Creating home and community

Spreading meanings about cohousing as a more sustainable alternative to traditional forms of housing was always an aim for the community.

We started from the beginning saying that we wanted to proliferate cohousing communities (Giselle, Murundaka, 6 years)

The very existence of the cohousing development did this in two ways, firstly by expanding the range of possibilities in terms of housing by being a real-world example of cohousing, which is rare in Australia. Secondly, by being situated in a very normal Melbourne suburb, it particularly demonstrated how mainstream communities could enact significant changes to live more sustainably. Murundaka has received (and importantly, community members have made themselves available for) significant media coverage since it was founded, which is a powerful medium for spreading ideas of cohousing. A search of the Factiva database⁷⁰ found 21 articles have been published since 2011, with nine of those published in newspapers with state or nation-wide distribution, and the rest in local newspapers.

Murundaka residents have established a website to share ideas of cohousing and knowledge about the process that they went through to establish Murundaka. They have also been actively involved in running workshops and community information sessions on cohousing practice for the Sustainable Living Festival (which is one of Australia's largest sustainability festivals), and the local community focused Seven Positive Sustainable Solutions Talk, to spread the idea of alternative types of housing development and design (Foyster 2014b). As well as spreading the concept of cohousing, these workshops were designed to share some of the competence and skills required to develop or run a cohousing community.

Another conscious effort by the Murundaka community to intervene to encourage the spread of cohousing was to provide the common house as a meeting space to forming cohousing groups (as

⁷⁰ <https://www.dowjones.com/products/factiva/>

well as other organisations such as Cohousing Australia), which is an important material element in the formation of a group. The residents understand the value they can provide to other community groups by hosting events and meetings:

We know from forming groups and organisations over the last, you know, long period of time, that getting a venue to have a meeting can be a really big problem... and we've drawn on the hospitality and the generosity of other organisations. So to be able to be a place where we can extend the hospitality and generosity to foster this generative thing in our community feels only right (Giselle, Murundaka, 6 years).

Trying to break down these kinds of interventions between recrafting of existing practice and practice substitution reveals that differentiating between the two classifications can at times be a matter of interpretation, depending on the intention or eventual outcome as much as the actual nature of the intervention. Spreading ideas about cohousing could be seen as an attempt to recruit new carriers into a different form of housing practice, away from traditional individual households. However, this is a difficult recruitment to achieve, and these meanings of sharing spaces may reveal themselves in changes to elements of existing practices. For example, with people knocking down fences and sharing backyards for gardening, a form of retrofit cohousing⁷¹, without needing to create a new development.

Some interventions, which could be seen as spreading competences, are perhaps better described as efforts to recruit new carriers to community creation through supporting forming cohousing groups. Heidi discussed hosting common meals and fundraising events for both Urban Coup and Banyule Cohousing, two Melbourne based cohousing groups, and working with them to help them get new initiatives off the ground:

I do little vignettes for some of the current housing groups that are approaching local councils to try and get them interested and bring them along for the ride on helping them find a site, or a developer, and those sorts of things. So building relationships between people who are interested in forming groups and the different players that are going to need to come today... helping them, you know it is drawing on that, producing something that the planners, that the council, will understand. And knowing how to do that quickly, looking things up and stuff. And giving the group confidence of their vision is achievable. Like is it realistic, would we need three sites, you know, three house blocks? Two? (Heidi, Murundaka, 6 years).

The importance of community creation practices spreading through existing communities can be seen through the influence of older communities in the creation of both Murundaka and Bundagen.

⁷¹ See N Street Cohousing for an example of this kind practice in the United States (<http://nstreetcohousing.org>)

Iain drew on his experience at Dharmananda and Bodhi Farm communities for inspiration to form Murundaka:

Well, we wanted to do it for ages, when we started the co-op program that was about 30 years ago then and we knew that we wanted to do this all the time because we knew small clusters of communities would work and I've lived on other intentional communities too... Dharmananda for a while and Bhodi farm I was quite familiar back in the 80's (Iain, 6 years).

These are both communities that Chris at Bundagen mentioned as having spent time on before Bundagen was formed. The fact that Chris and Iain both referenced their time previously spent living in intentional communities indicates the role that time in experimental communities can have in developing meanings or competences (or both) that can have long-term effects.

Governing home and community

Heidi described an example of one of the key parts of Murundaka governance practice – consensus decision making – spreading from the community into a workplace setting, hence recruiting new practitioners.

My role at work has changed, and I'm kind of tasked with looking to the future and looking at how we're going to innovate... to better support the kind of outcomes we want to get in projects. And it's taking this learning; it's taking pretty much all of these skills and expanding on them in a commercial context. So it's not just seeing how communities can learn to live and work together to address their problems, it is being able to translate that now back into the building industry, in Australia, in Melbourne... And I've facilitated sessions at work now with different groups, you know, looking at consensus. Well, we don't call it consensus, I call it collaborative decision-making, but it is consensus decision-making (Heidi, Murundaka, 6 years).

This example is particularly illustrative of innovative practices that can become established in niche settings, and then spread to completely different settings.

Food

The role of gardening groups and working bees, where inexperienced gardeners could work with permaculture trained experts and learn from them through 'legitimate peripheral participation' was discussed in Section 8.3.3. As well as these internal opportunities, Murundaka hosted a number of workshops for members of the wider community, based around creating a productive garden (composting, irrigation, garden bed creation) or alternative sourcing of foods (edible weeds). These were generally organised by one of the permaculture trained members, and partially funded by grants available from Banyule Council. This could be seen as an intervention to share specific knowledge and skills to enhance existing gardening practice. Again, depending on the current

practices of participants, it could serve as an intervention that encourages growing food in a backyard garden as a substitute for shopping for food.

Murundaka has at various times acted as a delivery point for community supported agriculture (CSA) and organic food box schemes, as well as organising bulk buy of dry goods. Some of the participants were not residents of Murundaka, although the extent of the involvement of wider community members was unclear. This is an example of the resources of the community (space, and a critical mass of customers in one location) being used to support a less resource intensive form of shopping for food (depending on whether wider community members lived close enough to walk/cycle rather than drive to collect boxes).

Both the interventions of encouraging gardening and CSA box schemes are implicated in wider systems of interconnected practices, particularly what Spurling and McMeekin (2015) refer to as shopping/driving, the mobility practice associated with getting food for the house by driving to supermarkets, for example. This has sustainable consumption implications for those who live nearby Murundaka and can replace shopping (global food chain)/ driving with shopping (local organic food)/ walking, or shopping (local organic food)/ driving, even though there is still uncertainty about the relative fuel efficiency of delivery shopping when compared to personal shopping (Schanes, Giljum & Hertwich 2016). The social interactions that occur at a small local box collection point can differ from those that take place in large centralised supermarkets, although data regarding this was not obtained in this research.

Mobility

There were a couple of examples of interventions in mobility practices. On a small scale, one of the Murundaka members had listed their car on a peer-to-peer car sharing network, which expanded the opportunities for other members of the neighbourhood to use a shared car, a more resource efficient material element of driving.

The Banyule peak-hour transport race, which Murundaka members were heavily involved with and was discussed in Chapter 7, is an example of an intervention aiming to encourage defection from driving to either cycling or public transport usage. However, whilst that was the aim, the focus on speed in reaching the destination meant it only really targeted one element of commuting transport practices – the meanings of arriving in a timely, healthy and environmentally friendly manner. This is perhaps best summarised by a quote from organiser Councillor Tom Melican, who shared his response to people who asked him how he found time to ride a bike, which was simply 'I haven't got time to drive a car' (Foyster 2014a).

Further intervention possibilities

The analysis of interventions with the potential to influence practice directly within the surrounding community revealed interventions focused on two domains, namely community creation, and food. This reflects two areas of well-developed competences within Murundaka, and potentially areas of particular receptiveness of the wider community. Murundaka had residents with the motivation and skills to organise workshops or special events, which they had developed through the creation of the cohousing community and practising large-scale backyard gardening for a number of years. They also had the physical space in which to host events for the broader community. Murundaka had focused predominantly on intervention types that made use of the particular advantages provided by the experience of the community, which is a logical approach.

No obvious examples emerged of interventions from Murundaka that were specifically targeting dwelling-the-house practices. This may reflect that these practices are often inconspicuous daily practices, which may make spreading practices and elements related to dwelling the house on a wider scale more difficult. A potential pathway for influence that had not occurred, but was suggested by Heidi, was that Murundaka could open the common house space (or at least parts, such as the office space) to members of the local neighbourhood or the wider community. This would create a local co-working space that could alter patterns of mobility and local socialising. In a similar vein, goods and equipment that are already shared within the community could also be shared with the wider neighbourhood. Furthermore, the RUG room could be used to collect certain types of resources/waste from other households in the street. Any of these suggestions would involve sharing with people that wouldn't necessarily share the same attachment to the Murundaka space as the members, so may be difficult without the same level of trust being developed. Although, given that Giselle had been living in that location since the early nineties, the community had maintained *'quite active... connections with our immediate neighbourhood'* (Giselle, Murundaka, 6 years).

Considering other potential initiatives brings into focus some of the limits of the ability of a community like Murundaka to directly intervene in practice on a wider scale. Pursuing too many initiatives could be too great a burden for a community that is both trying to seed wider change, but also be a home for all the residents. As a community, they were already conscious that event and meeting burn-out was becoming a potential problem. The community governance practices already required a significant commitment from the residents. Whilst these were viewed as a necessary part of community life, the additional burden of frequent visitors, workshops and other public events risked placing too much stress on community members. The responsibility of presenting cohousing to the wider community may overstretch the resources of the community and interfere with its proper functioning.

The research on intervention activities looked at what the community had done but didn't explore the reasoning behind the particular areas of focus. However, it could be speculated that practices within the governing home and community domain showed less evidence of influence because they had specific relevance to managing the shared spaces of the community. They are therefore less relevant to individual households. Whilst it has relevance in influencing the ways that shared spaces in the wider community are governed, these are already managed by local governments and other organisations. This would suggest that for Murundaka to influence these kinds of practices would require direct engagement with these kinds of institutions.

Focusing interventions on the groups and people with either the greatest receptivity to adopting more sustainable practice or the capacity to enact changes on a wider scale, could also be an approach to limit burnout that Murundaka residents may experience from their role as one of the few examples of the 'innovative performance' of cohousing. The forming cohousing groups that Murundaka had already engaged with (Urban Coup and Banyule Cohousing) are examples of groups that are particularly receptive to learning from Murundaka. They also have the potential for wider impact by creating further cohousing communities that could potentially share the burden of 'innovativeness' with Murundaka. The next section will explore how Murundaka has influenced the practices of planning, housing and urban development professionals, who potentially have a wider scope for influencing everyday practice sustainability.

9.3 How can Murundaka influence professional practices (indirect)

The Murundaka community had generated considerable interest from housing, planning, and urban development professionals (herein referred to simply as professionals), as well as university researcher students. Many had visited Murundaka to understand more about cohousing as an alternative housing option, as was noted in Table 9-1. As one Murundaka member explained, interest was coming from:

different planning people, other councils who may be thinking of this stuff, particularly people looking for housing that works for low-income people, disabled people, special needs people, just trying to get the idea around what is this cohousing, how does it work together (Iain, Murundaka, 6 years).

This is particularly interesting as an example of elements of meaning, and perhaps competences, spreading to professionals, and therefore influencing professional practices. Recent scholarship has explored the nature of professional practices, of those who have a role in 'making and shaping infrastructures' that are critical in sustaining many different practices at the same time (Shove, Watson & Spurling 2015). The previous chapter highlighted the greater agency that the case study

communities had in governing everyday practice, given the participation of community members in creating and governing a significant part of the infrastructure of their everyday life. The relatively small scale of the communities allowed the communities to attend to the sustainability of practices as they evolved over time, yet also provided a natural limit to the direct scope for governance and intervention in practice. As explored in the previous section, there still exist pathways for elements and practices to circulate into the wider community, giving the Murundaka community opportunities to spread sustainability practices. Yet, the scope of the community to intervene on a wider scale at the level of practice-entities, for example in the 'making and shaping' of infrastructure, is constrained.

Therefore, this section draws on interviews with a number of professionals in the Melbourne region that had previously had interactions with Murundaka in their professional capacity. The interviewee details were provided in Chapter 4. These included strategic planners, land and housing strategists, other local government officers and urban development managers. These were professionals that had a direct role in shaping both local housing development and the spatial arrangements of everyday life (Shove, Watson & Spurling 2015). The goal was to develop a greater understanding of the role of an intentionally sustainable community such as Murundaka in influencing professional practices.

9.3.1 Role of professionals in shaping infrastructure and policy

The previous chapter introduced the concept of base infrastructures (e.g. roads, sewers, pipes, housing) as material elements possessing particular qualities; they generally have a long lifespan, they connect different sites of practice, they are generally involved in multiple practices, and they service more than one user (Shove, Watson & Spurling 2015). Shove et al (2015) suggest that greater thought could be given to the professional practices of designers' and planners', how they influence the relationship between infrastructure and practice, and understanding how professional and everyday practices impact each other.

One way of thinking about the role of designers and planners is to attribute a special hand to those involved in infrastructure design, able to limit, enable and shape the evolution of complexes of practices that others enact. However, Shove et al (2015) argue that methods of infrastructural development are part of the wider systems of practice dynamics. The interaction between infrastructure and practice does not happen in just one direction, design and policy-making can be both providing conditions for new trends in practice to take hold and/or reacting to existing trends in practice (Shove, Watson & Spurling 2015).

The discussions held with planning professionals with local government experience supported this argument. Planning approvals were described as generally focusing on plans 'in keeping with the

existing character of the area'. This means that what gets approved is generally similar to what is already there – single level detached housing in the Banyule area – reflecting the prevailing practice of house building. In the case of Murundaka, a shift in approval practice occurred as a result of the global financial crisis (GFC) response. The Nation Building Economic Stimulus Plan saw Federal stimulus funding going to State governments, some of which went to housing associations to build social housing. To fast track building and construction (to serve as an effective economic stimulus), the approvals for this kind of social housing construction were overseen by the State planning department⁷², which was described as having more of an appetite for different projects than the local councils. If the project went through local council approvals:

they wouldn't have got what they've got now. They might have got some of it, but not all of it. They wouldn't have gotten anywhere near as much as we've got now. It was really the circumventing of the approvals process and having a design locked in with Common Equity Housing and the funding stream from the federal government and the participation made by the owner that really made it happen (Professional A).

From a practice theory perspective, the creation of Murundaka can be seen as occurring once all the appropriate elements were assembled. The meanings and competences had been evolving within the core group members for a long time, but it was only when money from the stimulus funding provided a site and the other materials that it could be enacted. The emergence of Murundaka into the local housing regime also closely resembles the transition process conceptualised by MLP (outlined in Chapter 2), in which a niche (in this case the cohousing community) can develop internal momentum, but it wasn't until external landscape pressures – the global financial crisis and the ensuing response – disrupted the existing regime and created an opportunity for the niche. As described by one interviewee:

my opinion is that when I see major projects, which are change projects, like this one, that's common. There has to be a sequence of ... The wider landscape around the project, the timing has to be right (Professional A).

This indicates the difficulty (at least within the local area) of replicating the Murundaka model on a wider scale, and highlights the importance, should Murundaka as a project seek to change the regime, of seizing the opportunities it has received to spread practices to change the regime context for future projects.

⁷² The planning regime in Victoria, Australia is largely created by the state planning department, with local governments allowed to modify the planning regime to give 'local flavour' (Professional A). The states delegate authority for planning approvals to local government. The State only intervenes in planning when it needs to address state significant issues (e.g. economic stimulus), when it can overrule local government within the context of regulation.

Shove et al (2015) conclude their exploration of the role of planners in shaping infrastructure by stating that whilst they do have a distinctive role, with the capacity to shape infrastructure and systems of provision:

the sources of change in what people do, in how practices connect and in the energy demands that follow cannot be simply attributed either to infrastructures in isolation or to those who make them and keep them in working order' (p284).

The interview comments illustrated how professional planning practices are firmly rooted in existing practices of, for example, house building. They respond to the existing character of the neighbourhood, which is generally seen as reflecting the values of that neighbourhood.

The discussions with planning professionals highlighted a point of tension in the way that change can happen in planning practices. There is a strong normative pressure to replicate the existing character of housing, meaning that to a certain extent, what gets built is what has been built previously, and introducing innovative ideas is much easier after one has already been introduced⁷³. This is the challenge facing professionals (or community members) seeking to encourage housing types that promote more sustainable patterns of consumption.

The interviews suggested that Murundaka was primarily able to influence this dynamic as a real-world example of cohousing, but could do so in two ways: influencing professionals and elected councillors within local governments and influencing the ideas of the local community.

Planning and housing professionals from local governments could demonstrate Murundaka to the elected councillors. As the representatives of the local community areas that tend to be conservative in nature (as discussed above) they can be expected (to a certain degree) to vote for policies that will be acceptable to their community members, so concrete examples of an idea can be used to spread alternative ideas. A neighbouring local government area (LGA) to Murundaka provided a useful example of this. Representatives of this LGA organised a study tour of the Murundaka development, in preparation for the future redevelopment of a former high school site in their region. The tour included elected councillors and internal staff to *'to show them some alternative ways of doing it [the future redevelopment], that could mean there could be a co-ownership element' (Professional C)*. They were impressed by what had been achieved at Murundaka by creating a development across three sites (three house blocks), which allowed *'quite a clever development'*. They were particularly impressed with *'the communal areas...and the sense of*

⁷³ The street that Murundaka was located on was undergoing a change in character, with free-standing homes being replaced by single story townhouses, however townhouses are common in neighbouring areas. They are not as unfamiliar as a three storey cohousing community with a large amount of shared space. Even when local planning or housing professionals want to introduce new ideas, they're ultimately responsible to the local council members who are elected by the local community. In the interviews, the local community was described as very traditional and generally conservative.

community would come from that' (*Professional C*) as well as the design elements of parking on the fringe and the shared laundry spaces. They found Murundaka useful as a real-world example of alternative ideas, as it

probably reduced the distance between, if I'd gone into the council and just tried to describe it verbally, all they would have heard is "hippies" living together. You know what I mean? (Professional C)

A former housing strategist from another neighbouring LGA also emphasised the importance of having demonstration projects that allowed experimentation and provided learning opportunities. They attended a study tour of Murundaka as part of an inter-council Housing Advisory Committee. Two aspects of Murundaka were of primary interest for the study tour; the development model that was organised in partnership with a housing association (CEHL) as well as a specific interest in the cohousing model. The LGA had been approached by a couple of groups looking for council support to develop cohousing projects. One group, a low-income multi-faith Muslim group, had also visited Murundaka. Following on from the tour of Murundaka, one of the councillors from the LGA undertook a further longer study tour of cohousing in the UK.

The second point, about Murundaka influencing the perception of the local community, has already been discussed in Section 9.2. The discussions with the planning and housing professionals added to that analysis by emphasising the influence that Murundaka could have through open days etc. simply by reducing potential 'fear of the new' amongst mainstream community members.

This can be related to Schatzki's (1996) concept of a practice entity as representing the accumulation of all the performances of a practice over time and space (Blue & Spurling 2014). The Murundaka community, as the embodiment of the performance of the creation of a cohousing community, and more broadly of the creation of a housing development, has changed the practice-entity, making certain things more and less probable in the future (Blue & Spurling 2014). Given the small number of cohousing communities in Australia, it takes on a greater significance in exposing more carriers (both related professionals and 'regular' community members) to different understandings of what is possible in community and housing development.

This discussion points to the role that Murundaka can now play as an example to encourage future niche developments. Yet the story of the sequence of events that aligned to create Murundaka (described in Section 7.2) also highlights the difficulty of creating alternative housing forms without support from urban development policies and strategies at a higher level (e.g. state government). In the interviews with planning, housing and urban development professionals, the State approvals process that applied for Murundaka was described as allowing a better outcome for the development than would have occurred if the decision had been the responsibility of Banyule

Council. This was essentially due to the fact that the state approvals process was responding to some different drivers than a local government process would have.

Specific demonstration development areas in Scandinavia were highlighted as examples of governments providing support to experimental development ideas, something that she felt was lacking in Australia. This perhaps helps to explain the large amount of interest from the wider community that Murundaka has generated. This points to a need for greater encouragement of innovative niche and demonstration projects in the planning and housing space, with overarching guidance at a city-wide or state level.

Murundaka as a real-world demonstration project, a physical example to spread meanings and ideas about cohousing, emerged as a key influencing role for the community. The interactions between Murundaka and Banyule Council regarding alternative conceptions of waste is another example of intervening in the policies of the LGA. The Murundaka founders and residents were conscious of trying to do something different from a conventional housing development. They were also conscious of trying to create wider change through the processes that Murundaka went through, of bringing others 'along for the ride'. One example of this was the work of the Resource Utilisation Group (RUG) and their efforts to reduce waste output from Murundaka. It has previously been discussed (in Section 7.4.4 – Disposing (of waste)) that the community negotiated an exemption to reduce the number of landfill bins provided to the community by the council. However, this was described as a 'difficult' process to achieve. Once the residents were living in Murundaka, the RUG monitored ongoing landfill bin usage and met with an unofficial reference group made up of waste officers from Banyule Council and researchers from The University of Melbourne to review the bin usage statistics. In this way, the Council was given clear data and feedback about their decision to allow less than the standard number of bins to be used. Giselle (Murundaka, 6 years) described the people that RUG reached out too as getting '*really excited*', and that they '*were giving them a lot of credibility*' by showing the waste reductions achieved.

The relationship that developed around resource usage is one in which Murundaka is playing a more active role in the engagement. Greater engagement between the community and professionals presents an opportunity to increase their influence. This point was made in the interviews, suggesting that there is room for greater influence to come from increasing the engagement with politics, governments and communities.

To move all this thinking around cohousing forward, you need some bullish, strong-willed people who are prepared to engage with governments and communities and be forthright activists... this is where change comes, it's changing the paradigm, so the next change is influencing local politics (Professional A).

The concept of Murundaka community attempting to intervene to introduce more sustainable consumption practices in the wider community, both directly and indirectly through professionals has been useful in framing different pathways of influence. When considering how the community can more effectively engage with the regime in increasing the influence of intentionally sustainable communities, there are a number of useful analytical tools available from grassroots innovations and strategic niche management literature that can extend the understanding of this case. This will be discussed and explored in the following section.

9.4 Murundaka as a grassroots niche: regime influence and diffusion pathways

The grassroots innovations perspective, introduced in Chapters 2 (Section 2.4), is part of the broad sociotechnical transitions literature, with a focus specifically on the role of innovative social and technological practices in grassroots initiatives in contributing to systemic change. Up to this stage, this thesis has explored the changing everyday practices that can develop within intentionally sustainable communities, which are understood as grassroots initiatives with specific principles of sustainable living. This has highlighted the multitude of ways that everyday practices can be substituted and re-crafted in projects within a niche where alternative 'rules of the game' can be enacted, sheltered from the selective processes and pressures of the regime (Boyer 2015).

As mentioned in Section 2.4, the conceptualisation of grassroots innovations as niches has allowed researchers to apply and develop the strategic niche management (SNM) framework to evaluate growth and development within grassroots niches (Seyfang & Haxeltine 2012). SNM seeks to identify the conditions that allow niches to successfully diffuse their ideas and practices into wider society (Seyfang & Longhurst 2016). SNM was originally conceptualised to examine the management of technological niches. However theorists in the field have proposed a redirection of focus towards social aspects (Hegger, Van Vliet & Van Vliet 2007; Schot & Geels 2008; Seyfang & Smith 2007).

This field of scholarship can deliver useful insights towards answering the fourth research question, so it has been used to analyse the development of Murundaka as a niche project and to a small extent, the development of an intentionally sustainable communities niche, to consider how they can influence the wider community or regime.

9.4.1 *Successful niche development*

SNM literature considers successful niche growth as relying as much on processes within the niche as on changes outside the niche. Early SNM literature identified three key processes for successful

niche growth and emergence: managing expectations, building social networks, and learning (Kemp, Schot & Hoogma 1998). These key processes are described as follows: i) Expectations are managed so that they are widely shared and robust, specific enough to guide the niche and be both credible and achievable, ii) Internal and external networks are developed that are broad and deep, involving many stakeholders that can provide resources to support the growth of the niche, iii) shared learning within the niche that provides both first-order learning (everyday knowledge for instrumental gains) and second-order learning (reframing of the problem being addressed) (Schot & Geels 2008; Seyfang & Longhurst 2016).

The in-depth exploration of the development of intentionally sustainable communities as an Australian niche was not the focus of this research. However, the process of database creation for case study selection and case study interviews gathered useful data on a number of the internal niche processes. A summary of these are presented in Table 9-2, which drew inspiration from the metrics of niche activity used by Seyfang and Longhurst (2016). This analysis indicates firstly that as a niche project, Murundaka exhibits a number of signs that it is contributing to the processes of niche development. Secondly, internal networking within the Australian niche is reasonably well developed, with conferences and formal networks. However activity within these networks appears somewhat sporadic. Based on interviews it was clear that informal networks and social connections still play a significant role in internal networking of the niche. This brief analysis points to further exploration of niche development as a useful area for future research on Australian intentionally sustainable communities.

Table 9-2: High-level assessment of Australian intentionally sustainable communities (niche) and Murundaka Cohousing (niche project) development

	Murundaka Cohousing (Niche project)	Australian intentionally sustainable communities (National niche)
Managing expectations	High-quality website Shared values within the project Significant agreement within the project of vision	Low activity, infrequently updated websites ⁷⁴ : Significant variation amongst projects around Australia Diverging understandings between projects of expectation of the niche Many communities are quite private with minimal external engagement

⁷⁴ Websites include: i) <http://www.equilibrium.org.au/coophousing/>, ii) <http://communities.org.au>, iii) <http://www.aicconference.com>, iv) <https://ecovillage.org/region/genoa/>

	Murundaka Cohousing (Niche project)	Australian intentionally sustainable communities (National niche)
Internal and external networking	Home for Cohousing Australia Strong links with Sustainable Living Foundation (intermediary organisation) Openness to study tours and discussions with government and business groups	National conference held on an irregular basis (2001, 2011, 2013) Multiple networks and intermediary organisations that are internally and externally facing (Cohousing Australia, GEN Australia), Predominance of informal networking and regional networks
Second-order learning	Holds seminars to support new projects Multiple examples of participation in academic research	Guides available for helping start intentional communities (not widely distributed) Training (Ecovillage design courses) available for new projects Multiple examples of participation in academic research International and Australian examples of user guides and handbooks (resources to support new projects) Limited number of people involved in multiple projects

Raven (2012) has also discussed further factors that support the development of successful niches. Scholars make the distinction between specific niche projects or individual sites of innovation (such as an individual community like Murundaka), and widely connected niche networks (Boyer 2015, p.321). For instance, a global niche has emerged around the ecovillage movement, a *'niche for alternative construction, social governance, and resource management practices that defy conventions of the urban development mainstream'* (Boyer 2015, p.324). Niche networks made up of many projects, intermediary organisations and actors are better able to circulate knowledge, coordinate and present a coherent alternative to the existing regime practices, increasing the translation from niche to regime. Another factor is recognition of the importance of regime and landscape dynamics in the development of successful niches. Landscape pressures or regime crises create opportunities for niche innovations to grow in influence, and can equally stimulate experimentation by activists that leads to niche formation, as evident in the creation of Murundaka (Raven 2012). Finally, niche protection is vital in providing shielding from external pressures, nurturing innovation development, and empowerment to transform regime systems (Smith & Raven 2012).

9.4.2 Diffusion from the niche

The SNM literature has also dedicated considerable space to exploring the ways that niches can diffuse ideas and practices to the mainstream regime, as this is also an important indicator of a successful niche (Schot & Geels 2008). Research regarding grassroots innovations has looked at the relationship between niche development and diffusion success, and identified internal networking between projects within the niche as the strongest indicator; more important than external networking with wider social actors (Seyfang & Haxeltine 2012; Seyfang & Longhurst 2016). In contrast, shared learning and management of expectations has appeared to be relatively unimportant (Seyfang et al. 2014; Seyfang & Longhurst 2016). Overall, research has found that when niches have adopted the key internal niche-development processes, and these coincide with opportunities presented by the presence of favourable conditions in the regimes or landscapes, then innovative ideas can diffuse from the niche into wider society, influencing the regime (Seyfang & Longhurst 2016).

Along with niche development, scholars have outlined the primary pathways that innovative ideas and practices can follow to diffuse from the niche to the mainstream (regime). The three most commonly cited are:

- Scaling up: When projects or initiatives grow in size, activity or impact, attracting more participants, perhaps from a broader audience beyond the activist core.
- Replication: Diffusion of practice within a committed activist network, to new locations or contexts – thereby increasing the number of participants and scale of the innovative activity and bringing about aggregated change.
- Translation: The adoption of innovative elements of a grassroots niche ideas and practice by new types actors in new contexts, e.g. at higher institutional levels (in the regime) with complementary structural changes in the adopting institution – often associated with gaining influence by losing much of their radical ethos (Boyer 2015; Seyfang & Haxeltine 2012; Seyfang & Longhurst 2016).

Evidence of the various types of niche diffusion from Murundaka cohousing community is outlined in Table 9-3.

Table 9-3: High-level assessment of niche diffusion from Murundaka cohousing community (niche project), and Australian intentionally sustainable communities (niche)

	Murundaka Cohousing (Niche project)	Australian intentionally sustainable communities (National niche)
Niche replication To new locations or contexts	Yes. Members have played a key role in the Australian cohousing movement. Regular tours. Website. HelpX visits. Have hosted common meals and fundraising events for other cohousing groups – Banyule Cohousing and Urban Coup. Promoting cohousing through the sustainable living foundation. (see list of engagement events in Table 9-1)	At least 60 projects – likely many more Continual formation of new community projects (high drop-off rate before success)
Scaling up Growing in size, activity or impact	Little evidence of scaling up of physical design or governance practices. Evidence of engaging with an audience beyond the activist core, through hosting numerous workshops available for the local community, providing coordination point for CSA boxes, key part in Banyule peak-hour transport race.	Largest project over 150 people in size
Translation Of niche ideas to mainstream contexts	Some evidence of engagement, little of actual translation. Tours with community development team, positive ageing team and councillors from Nillumbik Shire Council (potential development did not progress) Tours for consultants and developers, including Village Well and Places Victoria. Developed cohousing through CEHL housing association, but no evidence of further cohousing developments from CEHL	There are a number of examples 'eco-developments' bringing ecovillage ideas to mainstream developments. E.g. Currumbin Ecovillage, Cape Paterson Ecovillage, Lochiel Park

Whilst the analysis in Table 9-3 focused on the three diffusion pathways discussed; it is noted that further developments are occurring related to grassroots diffusion. A current European-based research project (ARTS) looking at local transition initiatives, which aim to create transformative change towards environmental sustainability, has expanded these pathways for diffusion into five acceleration mechanisms (Egermann & Valkering 2016). Along with *scaling up* and *replication*, they propose *coupling*, *instrumentalising* and *embedding*. Coupling refers to transition initiatives linking together within the city-region, within the same domain or across domains. An example from Murundaka could be the cohousing community using their common house as a coordination and pickup point for a local food cooperative, CSA food box group or Transition Towns initiative. The other two proposed mechanisms, *instrumentalising* and *embedding*, expand on the concept of niche-to-regime translation in the city-regional governance context (Egermann & Valkering 2016).

9.4.3 Diffusion and the spread of practices

The introduction of the concept of diffusion of ideas from a niche provides useful insights to understanding how an intentionally sustainable community can be considered successful in 'planting the seeds of change'. Yet, there is a risk here of conflating practice theory with concepts of niches and regimes, which are not situated and embedded in the same way that practices are. This is not the intention of this chapter, nor this section. Practices do not 'diffuse' as whole units, from one location (or time) to the next. As was discussed in Section 3.3, and revisited in Section 9.2.1, it is the elements of practice that circulate in different ways, at different speeds, with different geographical spreads. Elements are then re-configured by new practitioners in new locations, in ways which vary to greater or lesser degrees from previous performances of those practices.

The introduction of niche diffusion concepts into this thesis places a greater focus on niches, and niche projects such as intentionally sustainable communities. As has been discussed in this chapter, these communities can act as protected spaces or 'crucibles' in which elements can be combined in novel, potentially more sustainable, ways. If the success of an intentionally sustainable community in planting the seeds of change could be considered to depend on the extent to which it either contains, or acts as a conduit for the spread of practices and elements to carriers outside of the community (Shove, Pantzar & Watson 2012), then SNM concepts of niche growth and diffusion, add insights into pathways for increase the opportunities for elements of practice to spread. What practice theory contributes to this discussion are the mechanisms for how this growth or spread occurs. For example, the replication of intentionally sustainable community indicates a diffusion of ideas with the creation of another niche project site. Yet what is occurring in this situation is people forming or joining a new community, which involves the circulation of certain meanings and competences to new practitioners, and the acquisition of certain material elements required for this to occur. Niche projects do not simply diffuse; this occurs because meanings can travel, competences can be shared, and it is in this sense that practices or elements of practice can diffuse from niches.

There are some similarities in concept between the SNM idea of translation from niche to regime, and a practice spreading from a niche project (with a small number of carriers) to a wider number of participants and becoming more stabilised through greater repetition of performance. As the analysis in Section 9.2 showed, many of the mechanisms for spreading elements and recruiting carriers in the wider community were through open days, events, workshops etc. These are all activities that had finite capacities, and therefore a limited audience of potential carriers. Replication of intentionally sustainable community projects, or scaling up through an increase in size, or number and reach of activities both create more opportunities to 'seed change' and circulate

elements of sustainable practice, as well as creating greater opportunity to translate concepts to professional practices, allowing intervention on a much larger scale.

9.5 Ideas for the more effective spread of sustainable consumption from intentional communities

This chapter has focused on Murundaka as a niche project within the wider grassroots niche of intentionally sustainable communities. As discussed throughout this thesis, communities in this niche have demonstrated significant reductions in environmental impacts through changing the consumption patterns in many domains of everyday practice. In order to understand the potential for this niche to influence sustainable consumption on a wider scale, this chapter has explored the activities of Murundaka, firstly through analysis based in social practice theory, and then drawing on concepts from grassroots innovations and strategic niche management.

Both approaches have proved useful, with SNM providing a framework to consider how niche projects can increase their influence, whilst the focus on how meanings, competences and materials can circulate and recruit new carriers to practices provides specific examples of diffusion from Murundaka.

9.5.1 *Summary of existing pathways of influence and diffusion*

To review the discussion from this chapter the SNM concepts of niche replication, scaling up and translation will be used as a framing. First, a key pathway for Murundaka to influence consumption practices on a wider scale was by encouraging the further replication of intentionally sustainable communities in new locations and contexts; this could also be seen as spreading community creation practices and elements. Specifically, it was providing spaces (materials) in which forming community groups could meet and host fundraising events, sharing competences with those group members through workshops and facilitated design charrettes, and spreading meanings and ideas about more sustainable forms of community (that could encourage new group formation) through media engagements, public open days and information sessions. Referring to Figure 9-2 (which is a further developed version of Figure 9-1), replicating intentionally sustainable communities would create more projects like Murundaka (the orange region), which can influence their respective local and broader regime and practice contexts. They also become new crucibles of innovation in practice that can potentially spread more sustainable elements of practice into the surrounding communities.

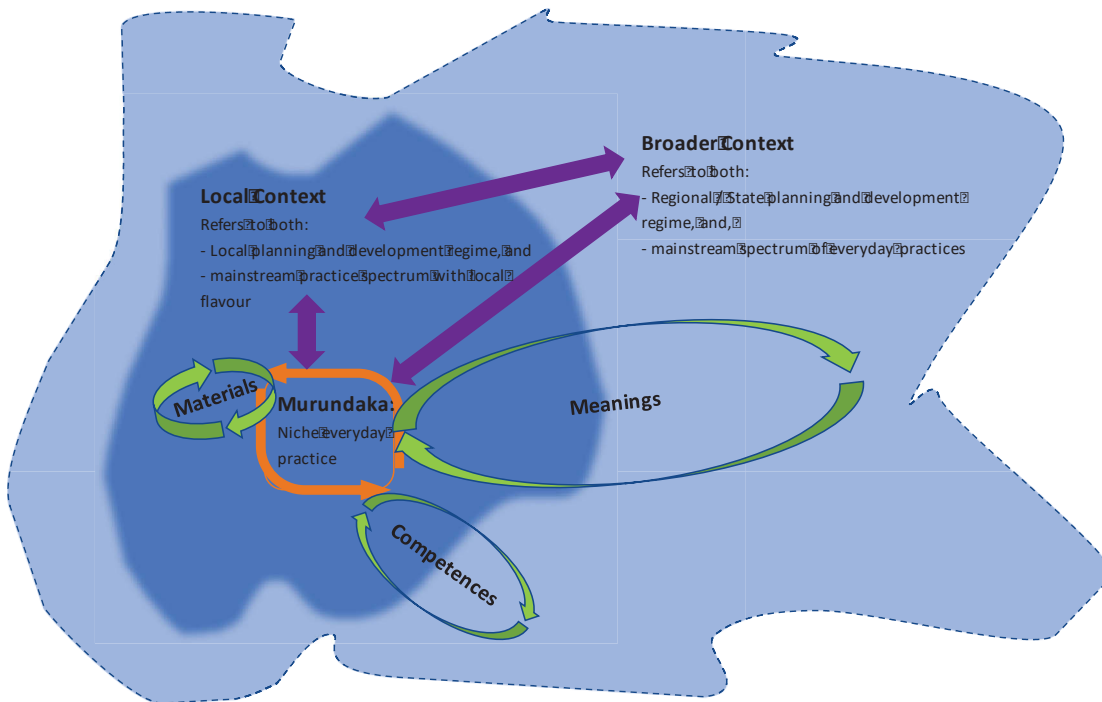


Figure 9-2: Schematic of interactions and circulation of elements between Murundaka, the local community context and the wider community context

Secondly, scaling up the size, activity and impact of the community represented another influence pathway. Murundaka was not as strongly engaged in scaling-up the community in terms of resident numbers. This obviously presents some difficulties given the finite land and infrastructure available to the community. However, there were examples in some of the other practice domains. During the times when Murundaka organised CSA food boxes, this was open to the wider community, which increased the number of people that could access these materials (locally-grown food). Permaculture-based gardening workshops (potentially) scaled-up the number of people in the wider community practising food growing. While Murundaka itself can't easily grow, it can continue to grow into a bigger role as a sharing hub for the community, accessible by a greater number of people beyond the core community group. Even so, there are limits on scaling up for this kind of niche project. Referring to Figure 9-2, scaling-up can occur by increasing the circulation of the different elements of practice to a wider audience. The different sizes of the loops in Figure 9-2 represent the typical potential spread of each element, as noted in this analysis and by Shove et al's (2012) descriptions of how elements circulate. Materials must be physically transported, or individuals must travel to the material for it to be used in a practice. Therefore the circulation of materials is locally focused. Competences have a broader potential circulation, but given the emphasis on learning-by-doing (i.e. physically attending workshops and events), it is still focused towards local circulation.

Meanings, however, have a much wider potential reach, for example through media reports about cohousing and Murundaka. The spread of meanings represents a key pathway for the translation of

niche ideas of cohousing into a more mainstream setting. Murundaka itself represents the niche ideas being adopted by one of the largest community housing providers in the state – CEHL. However, there have been no further examples of adoption of these ideas by CEHL. The exploration of professional practices indicated some areas of ongoing engagement with institutional actors (planning, housing and urban development professionals) with the potential for niche ideas to gain wider traction (the links to local and broader regime contexts in Figure 9-2). The professionals interviewed strongly indicated the value of real-world examples in influencing the further adoption of niche practices on a wider scale.

9.5.2 Suggestions to improve the spread of sustainable consumption from intentionally sustainable communities to mainstream

To conclude this chapter, the analysis will be expanded to suggest a number of strategies and interventions that the research suggests could be implemented, either by intentionally sustainable communities like Murundaka, or professionals and policymakers, in order to increase the spread of sustainable consumption practices. This first focuses on strategies to support intentionally sustainable communities, then considers interventions that could target existing neighbourhoods.

Support for intentionally sustainable communities

The discussion in Section 9.2 highlighted the limited support for the establishment of niche intentionally sustainable communities within the existing urban development regime, yet also the benefits that planning, housing and urban development professionals and the wider community could gain through the diffusion of sustainable practices and elements of practice. Combined with the evidence for improved sustainability outcomes that can be realised (as discussed in Chapter 5), this provides significant support for interventions that encourage the creation of more intentionally sustainable communities. This could be both through replication of similar projects to those that already exist or scaling up of projects such as Murundaka by, for example, adding another block of apartments to the existing cohousing complex. A key element in the creation of a cohousing community is access to funding, or capital, to purchase land or fund development. Means for increasing access to capital or land could involve: providing seed money to groups attempting to establish communities⁷⁵, institutional supports for investment into sustainable community developments that may be perceived as riskier by financial institutions, designating land in new developments or land releases specifically for deliberative or intentional community developments (Sharam, Bryant & Alves 2015a), or through otherwise addressing structural inequalities and

⁷⁵ There are anecdotal stories of Baugruppen housing cooperatives in Germany providing this kind of seed funding, although no verifiable examples could be found. It is unclear whether the organisational structure of Murundaka as part of Common Equity Housing (CEHL) would help or complicate any initiative of this kind.

distortions in policy and market contexts that hinder alternative community developments (Hargreaves, Hielscher et al. 2013).

Grassroots innovations research has highlighted the importance of internal networking of the niche (Seyfang & Longhurst 2016), and the significance of government, NGO, and private intermediary actors (Hargreaves et al. 2013), in growing and diffusing innovations. Sahakian and Wilhite (2013) also emphasise the role of policy-makers and other intermediaries in supporting both internal and external niche networking, arguing that:

For policy-makers and others interested in orchestrating changes towards sustainable consumption goals, one path may be to identify what is already changing and amplify existing efforts, not necessarily by scaling up from small to large projects, but bridging between communities of practice and sharing learning opportunities across different contexts (p.40).

Figure 9-2 shows meanings and competences circulating out from existing communities, yet frequently these elements spread because they are carried by people. This points to the importance of intermediaries, either as carriers to transfer elements between different contexts and locations or in creating opportunities for others to act as carriers. As noted in this chapter, networking within the intentionally sustainable communities niche exists through intermediary groups such as Cohousing Australia, or the Global Ecovillage Network presence in Australia. However, activity within these groups is sporadic, and this presents an opportunity for improvement. Hargreaves et al (2013) highlighted the difficulties of establishing and maintaining networks between grassroots niche projects that are often fully-occupied simply surviving. Coordinating multiple local grassroots projects within a niche, and working to respond to and influence local policy contexts is resource intensive work, as was seen in this research project. Hargreaves et al (2013) suggest intermediaries have a key role to play in assisting with these tasks, and 'opening up space in different contexts (whether local, policy, market, social etc.) for new and diverse kinds of activity' (p.879). In this way intermediaries, and the projects within the intentionally sustainable communities niche can encourage interactions between successful grassroots initiatives and the wider community.

Interventions in existing neighbourhoods

There are a number of strategies and interventions in practices and elements that have been discussed in the preceding chapters that could be beneficially encouraged in mainstream neighbourhoods. In neighbourhoods where intentionally sustainable communities are already located, this could take the form of supporting the scaling-up of existing practices and initiatives. However, given the small number of intentionally sustainable communities in Australia, wider impacts will come from translating practices and elements to new and existing neighbourhoods and multi-residential building complexes.

Firstly, one of the key points from Chapter 8 was the crucial role played by building supportive and enabling institutions and infrastructures for encouraging sustainable consumption. The research suggests that the members of a community or neighbourhood should have a greater role in creating and enacting policy for their neighbourhood, in an informed way. As discussed in Chapter 8, the ability of intentionally sustainable community members to act as both policy-makers and practitioners of aspects of their everyday life was a key mechanism for changing their consumption impacts. The community-scale of governance was large enough to have significant impacts and small enough that trust could be maintained amongst the community. Litfin (2016) suggests subsidiarity, the concept that decisions should be made at the lowest scale practicable, as a key principle to be learnt from ecovillages. Other researchers have also called for different approaches to public participation in urban planning with the aim of effectively transforming urban systems (Aylett 2013, cited by Wolfram & Frantzeskaki 2016). Hargreaves et al (2013) suggested that a key role for intermediaries was to support the 'development of a flexible and locally devolved institutional infrastructure that is not expected to speak with a single, common or coherent voice' (p.879). Key aspects of the community-level governance were the creation of an explicit vision and the improved ability to attend to the ongoing evolution of relevant practices to maintain a sustainable trajectory. Making community-held sustainable consumption aims explicit could effectively circulate particular meanings amongst a neighbourhood, helping to establish shared understandings. This, in turn, can increase the accountability to enact those understandings among community members. Given that adopting more sustainable consumption patterns requires changes of some sort in the conduct of everyday life, the shared and public participation in creating sustainability visions at a neighbourhood scale is crucial in guiding any other ongoing interventions in a community.

Secondly, the crucial role that the shared spaces play in bringing performances of everyday practice to semi-public spaces suggests a focus on encouraging the enactment of more of everyday life to occur in public spaces. These serve as places where normally inconspicuous practices are exposed to greater scrutiny, and where different elements (i.e. elements significant to environmentally sustainable living) can be exposed to new carriers. Increasing the exposure of members of a community to each other's diverse enactments of practice allows for a more rapid refinement of practice towards goals of sustainability. This increased exposure may be through the development or reinvigoration of existing public spaces such as libraries (as discussed by Spurling et al (2013)) community centres, public parks and plazas, or in a different manner. Litfin (2016) highlighted the important role that material infrastructures play in amplifying social trust and ecological sustainability, and this research suggests that spaces and the way they are used are equally important. Likewise, Meltzer (2005) suggests that creation or revitalisation of neighbourhood and community centres is 'an obvious first step' (p.167) for creating a focal space for a community.

A third, related, strategy looks at how many of the existing practices or key elements from Murundaka could be expanded or translated on a wider scale. For example, sharing of tools and equipment could be spread through the encouragement of initiatives such as tool sharing libraries, improving the efficiency of material consumption but also creating connection opportunities. In a similar vein, local co-working spaces, or material re-use centres that serve as expanded versions of the RUG room could be encouraged as ways to make better use of resources through sharing as a community. These could all be located within local neighbourhood centres that provide access to the required materials, but also spaces to share competences, and allow cross-fertilisation of meanings from different practices and individuals. Grinde et al ((2017) suggested the following features could be adopted in architectural and city planning 'shared rooms, communal backyards, easily accessible green areas, and factors that stimulate local engagement' (Grinde et al. 2017, no page number provided). As highlighted in Section 8.3.1, the development of trust between community members is a crucial element in enabling sharing of goods or spaces within a community or neighbourhood. Establishing community governance processes were a key mechanism used by the case study communities. This highlights the importance of considering any interventions as part of a program that addresses multiple aspects of practice systems.

The final point to emphasise is the importance of personal engagement and learning-by-doing for the spread of competences and recruitment of individuals (mainstream community members) into new practices. There were a number of examples where Murundaka had run workshops that provided these opportunities, focusing on specific practices such as composting, and there may be others that can be explored by the community to influence a wider audience in other domains of practice. The ability of a community to influence everyday practices could be expanded by bringing more people into their 'living sustainably' community of practice, to experience a different way of living in a more immersive way. Similarly, it is useful for professionals and policy-makers to consider this approach when attempting to apply lessons from niche practices. As emphasised by Sahakian and Wilhite (2013), initiatives to encourage sustainable consumption should include both teaching of important and relevant knowledge, but also should allow participation in the more sustainable practices.

The analysis presented in this chapter has shown that Murundaka has effectively established a number of pathways for influencing consumption practices in the wider community (Section 9.2 & 9.3), yet suggests the scale of impact can be quite slow and limited from a single project (Section 9.4). It has provided a number of suggestions that planning, housing and urban development professionals could consider for translation on a wider scale (Section 9.5). Finally, from a community perspective, it would suggest that improvements in internal niche networking and continued engagement with regime professionals could help to further expand the influence of intentionally sustainable communities.

Chapter 10. Conclusion

The purpose of this research, as explained at the beginning of this thesis, was to understand if intentionally sustainable communities are an effective response to environmental issues, how sustainable consumption is enacted in these communities, and how they can contribute to the adoption of more sustainable consumption patterns on a wider scale.

The broader context that frames this research, outlined in Chapters 1 and 2, is one of potentially catastrophic environmental challenges facing the Earth System in the Anthropocene era. The significance of global over-consumption, and particularly household consumption in affluent nations, was highlighted as a root cause of a large proportion of these environmental challenges and one that is implicated in all aspects of everyday life. The review of existing literature identified the limitations of mainstream approaches to changing consumption patterns. Addressing these challenges will require a reconfiguration (Geels et al. 2015a) of existing patterns of consumption, involving major innovations within, and changes to, the socio-technical systems that structure society. Whilst such a transition will require a multitude of actions at every scale; this research specifically focused on the role that innovative grassroots niches can have in seeding wide-scale change. It was this context that informed the choice of research focus: intentionally sustainable communities such as ecovillages and cohousing communities, which throughout this thesis have been demonstrated to be promising sites of grassroots innovations in household consumption patterns.

The epistemological stance adopted throughout the research was one of environmental pragmatism, which informed the use of mixed method methodologies and the use of a social practice theory (SPT) framework to guide the research. SPT was identified as an exemplary conceptual framework for sustainable consumption research, which understands consumption as embedded within the habits, routines and rules of everyday life (Chapter 3). The research design (Chapter 4) outlined the overall research aim, objectives and four research questions. Chapters 5 – 9 presented and analysed the data collected during this research to answer these research questions.

This concluding chapter will reprise the major findings of this research with specific reference to the guiding research questions (Section 10.1). Section 10.2 reflects upon the thesis in broader terms of how the findings contribute to the field of research on sustainable consumption and intentional communities. Section 10.3 outlines the key implications of the research for intentional community practitioners, urban development professionals, and policymakers concerned with sustainable consumption. Section 10.4 outlines some identified limitations of the research and Section 10.5

describes fruitful lines of inquiry to pursue in future research that have been highlighted by this thesis. Finally, Section 10.6 presents a few closing thoughts.

10.1 Main findings of the research

This section will summarise the findings in response to the four research questions described in Section 4.3.1.

To what extent do intentionally sustainable communities have a lower environmental impact than other communities? (RQ1)

This question was addressed in Chapter 5, which presented the results of the systematic review of quantitative assessments of the environmental impact of ecovillage and cohousing communities. On the whole, the results support the notion that intentionally sustainable communities are able to reduce their environmental impact by a meaningful extent. The review provided the most comprehensive collection of such data to date. The results of 31 different ecological and carbon footprint assessments of intentionally sustainable communities⁷⁶ compared with relevant mainstream populations were reviewed and compiled. The extent to which these communities had lower environmental impacts varied significantly. The community with the lowest comparative footprint - Sieben Linden, Germany - had an average per person carbon footprint ~25% that of the average German. The community with the highest comparative figure - Vuonismahti Ecovillage, Finland - was ~130% of the carbon footprint of the average resident of the nearby comparison town. Across all the carbon footprint studies, the average intentional community resident had reduced their carbon footprint by one-third, whilst the median resident had reduced their CF by half. Across all the ecological footprint (EF) studies – which provide a more comprehensive measure of the impacts of consumption – both the average and median intentional community resident had reduced their EF by half. These results were gathered from a systematic and comprehensive review of existing studies. They indicate a substantial degree of variation amongst communities, depending on the circumstances and particular characteristics of each community. The important caveat to this conclusion is that 31 assessments of 23 communities constitutes a small sample size. Nevertheless, it was a finding that provided encouragement for further in-depth research into how household consumption was becoming more sustainable in these communities. This was the focus of the next two research questions.

⁷⁶ The review was not restricted to sustainable intentional communities, but as noted in Chapter 5, as ecological and carbon footprints are metrics for environmental or sustainability performance, the intentional communities that undertook such an assessment generally expressed environmental sustainability goals.

What practices are Australian intentionally sustainable communities performing in order to reduce environmental impacts or improve the sustainability of the household? How do these practices differ from those of mainstream communities? What are the elements that contribute to the sustainability of these practices? (RQ2)

Bundagen Cooperative Community and Murundaka Cohousing Community were the focus of this research. They were chosen because they represent different dimensions of the diversity of the wider population of intentionally sustainable communities in Australia: new and old, medium-sized and large, suburban and rural.

Chapters 6 and 7 explored the array of daily practices that the residents of both case study communities implicated in the sustainable performance of their everyday life. These practices are summarised in Table 10-1 (also Table 8-1). Identifying these practices provides insight into the everyday household consumption practices that can evolve and stabilise (at least provisionally) within a niche environment that allows experimentation with new forms of sustainable lifestyles.

Table 10-1: Sustainability practices and domains of practice at Bundagen and Murundaka

Domains <i>(relevant sustainable consumption priority area)</i>	Murundaka Practices	Bundagen Practices
Creating home / community <i>(Home building)</i>	Creating a cohousing community	Creating an intentional community
	Designing a cohousing community	Designing an intentional community
	Community formation (joining and leaving)	Community formation (joining and leaving)
Governing home / community	Community Decision Making	Community Decision Making
	Visioning & Reflection	Visioning & Reflection
	Mindful communication	
Dwelling the house <i>(Use of energy using products (EuPs), and Manufactured goods)</i>	Energy provisioning	Energy provisioning
	Provisioning the home (acquiring)	Provisioning the home (acquiring)
	Clothes swapping	Electric lighting
	Disposing of waste	Disposing of waste
	Heating and cooling the home	Heating and cooling the home
		Energy consumption
		Household cleanliness, laundering and hygiene
	Toileting	
Food <i>(Food)</i>	Growing food	Growing food
	Shopping for food	Shopping for food
	Dining	
Transportation / Moving Around <i>(Mobility)</i>	Car Sharing	-
	Bike Riding	-

The sustainable consumption literature outlines three priority areas for action: home building and the use of energy using products (EuPs); food; and mobility (Tukker et al. 2010). Manufactured goods also have particularly significant consumption-linked impacts within developed nations (Hertwich & Peters 2009). The sustainability practices described in the communities were grouped according to domains of practice that loosely corresponded to the priority areas (See Table 10-1): the creation of home and community; the governance of home and community; dwelling the house; food; and mobility (Murundaka only). This analysis firstly indicated that the intention to live in a sustainable manner was manifested in a broad range of practices within the intentionally sustainable communities, capable of impacting all of the priority areas for action on sustainable consumption.

Chapter 4 (Section 4.3.1) introduced research that identified four clusters of household sustainability practice in Australian households (Waitt et al. 2012). Based on this research, mainstream households would usually engage in 'mainstream sustainability practices', sometimes engage in sustainable 'everyday purchasing decisions', and rarely participate in 'green branded' consumption practices. In contrast, the case study community households engaged in all clusters of practice, but notably showed a greater propensity to engage in the 'green branded' consumption practices less commonly observed in mainstream households. For example, composting was entrenched in both communities, growing food was widespread, as was a preference for local and organic foods. The analysis of the practices and elements of practices highlighted many common practices that would be described as 'green branded' but weren't listed by Waitt et al (2012)⁷⁷. Examples of these include vegetarianism, which was widespread, and shared-ownership of household tools and equipment.

The constituent elements of these practices were analysed and described using Shove and colleague's (Shove & Pantzar 2005; Shove, Pantzar & Watson 2012) conception of practices as assemblages of meanings, materials and competences. Throughout Chapters 6 and 7 the sustainability-related practices of the communities were discussed and analysed to highlight the distinct elements that were combined in the household practices of the community. These elements were identified in the summary tables throughout Chapters 6 and 7. Chapter 8 explored some of the commonalities between the practices and elements of the case study communities. A number of aspects of the elements (meanings, materials and competences) present within the communities that were key to their sustainability were identified in Section 8.3. These are summarised in Table 10-2.

⁷⁷ Although direct comparison with this study is not appropriate due to the different research approaches.

Table 10-2: Common elements contributing to sustainable practice within the case study communities

Element	Common elements evident in both case studies
Meanings	<ul style="list-style-type: none"> • Each community has an explicit vision or general understanding of shared principles of the community. • Both these communities had principles related to living in a pro-environmental or sustainable manner, so pro-environmental values were supported • There is a strong emphasis on sharing amongst the community • Simple living / voluntary simplicity as a better way of living – doing more with less • Promotion of social-connection / social capital
Materials	<ul style="list-style-type: none"> • Emphasis on recrafting key infrastructure to influence systems of provision – electricity, sewage, food • Sharing of goods amongst community members • Sharing spaces – more efficient use of space, and management of the commons could be more effectively governed (shared space required communal governance, communal governance allowed shared space) • The sharing of spaces and goods created greater opportunities for social interaction, more opportunities to share experiences, meanings and competences. Also created spaces where everyday practices became more visible, exposing normally inconspicuous actions in a way that allowed some comparison and normalisation amongst community members – new ideas about what 'living sustainably' looked like, or competences about how to do it.
Competences	<ul style="list-style-type: none"> • Ability to work together at a community (meso) scale • Distributed and collective competences • Ability to share and/or access knowledge with 'experts' within the community • Facilitated knowledge circulation and social learning amongst community members

Different households within the communities incorporated sustainable consumption into their household practices in different ways. For some, reducing private vehicle usage impacts through cycling, car sharing or public transport was most important, others focused on living simply, maintaining minimal possessions with only a small energy requirement, whilst still others placed a large emphasis on producing as much of their own food as possible from their organic gardens.

Why do the practices and elements of Australian intentionally sustainable communities differ from mainstream communities? What is the role of the intentional community in changing the practices of community members through interventions in:

- **elements of practice**
- **relations and interlinking between practices, and**
- **the recruitment of carriers to more sustainable, or innovative practices? (RQ3)**

There are two responses to the first part of this research question. First, the residents of these communities intentionally set out to be more sustainable. Second, the supportive community structure made it easier for them to achieve their individual goals.

Residents of intentionally sustainable communities are, in general, strongly committed to sustainable consumption. It is a guiding meaning in their practice. While this research did not attempt to compare the level of commitment to sustainability of the intentionally sustainable community residents and other Australians, it is reasonable to assume that intentionally sustainable community residents are more committed to sustainability than the typical Australian. This clearly helps to explain why practices differ in the intentionally sustainable communities compared to mainstream society.

Nevertheless, there are also likely to be many Australians that do hold strong meanings in relation to sustainable consumption but have been less effective in achieving more sustainable practices. Here, the role of the supportive community structure is crucial. The interventions in practice framework (Spurling et al. 2013; Spurling & McMeekin 2015) led to the consideration of the community members as both practitioners and policymakers of their everyday life. The members of the case study communities were empowered to deliberately intervene in the ecosystem of practices within their communities. The practices associated with intentional community living, and the associated meanings, competences and material elements, allowed the community residents to design and implement policies that shaped the elements of their daily practices. This could be seen in the early creation of their community visions, designs, and infrastructure (particularly in the case of Bundagen) and their ongoing community governance structures. These practices of intentional community living enabled the residents to move from individual agency to collective agency in their efforts to live and consume in a more sustainable manner. This collective agency allowed the community to draw on a wider pool of elements to shape and perform everyday practices in a more sustainable way.

Analysis across the spectrum of practices described in the case studies (see Chapter 8) highlighted examples of interventions that directly reduced environmental impacts of certain consumption practices (based on the sustainable consumption frameworks of Schanes et al (2016) and Seyfang (2009)). There were examples of recrafting of elements of existing practices, such as the greater usage of shared goods within the communities, which reduces the overall embodied emissions by reducing the quantity of a certain product (e.g. washing machines) required by the community. There were also examples of competition between practices through which more sustainable variants were substituted for other practices, for example, local organic food production instead of purchasing food, and cycling instead of driving. Table 8.2 in Section 8.2 summarised the substitutions in practice and recrafting of elements that were occurring in both communities against the sustainable consumption priority areas. This indicated that across a broad range of the priority areas, sustainable practices had replaced less sustainable ones, and elements had been recrafted to improve the sustainability of certain practices.

However, the scope of interventions within the intentionally sustainable communities was broader than just those interventions with direct impacts on resource consumption or footprints. The governance structures of the communities allowed the members to address the broader aspects of sustainable consumption that were described by Seyfang (2009). Summarised in Table 8.4, interventions by the communities also enabled greater building of community (social capital, supportive and trusting environments, co-location of practices in shared spaces), collective action by members (community governance structures including visioning) and the creation of new systems of provision (deliberative development of communities and housing).

Evident throughout the analysis was the interconnected nature of the different practices within the communities. The introduction of a certain practice such as independent energy production (solar with batteries) at Bundagen had spill-on effects, encouraging a greater awareness of natural rhythms of weather amongst some members, or changing the purchasing decisions of others. Within the relatively contained case of the intentional community, this reinforced the understanding that practices have emergent and unexpected trajectories (Shove & Walker 2010). The analysis described in Section 8.5 indicated the importance of the community creation and governance practices in two different ways: first, by enabling and supporting more sustainable elements to be integrated into the practice ecosystems of intentionally sustainable communities in a reflexive manner, and second, by allowing the communities to regularly review and adjust aspects of community life; supporting or correcting the trajectories of elements or practices on an ongoing basis.

The deliberative community creation process improves the ability of the residents to shape the policies and physical infrastructure of their communities in ways that align with their sustainability values. The collective agency of the community opens up a greater array of technological and design options than would generally be available to a single household. In this research, these options included off-grid solar infrastructure, and the consolidation of space for a common house, RUG room or shared garden area. It has previously been noted in the literature (see Chapter 2) that cohousing and ecovillages allow the greater adoption of sustainable technologies and the more efficient use of space (Marckmann, Gram-Hanssen & Christensen 2012; McCamant & Durrett 2011; Meltzer 2005; Szaraz 2015). By using SPT to analyse these communities, this research adds to this literature by showing that the collective agency and organisation increases the range of meanings, competences and materials available during community formation, and therefore the range of options available for households to shape their consumption practices. The visioning process was a significant practice for the formation of the communities as it allows meanings to be shared, reinforced and made explicit, creating accountability amongst community members.

Once the communities have formed, they are very well set up to act as 'crucibles' in which new, more sustainable arrangements of practice can be established, along with being conduits that circulate the elements of these practices among the community members (Shove, Pantzar & Watson 2012). These common elements contributing to sustainable practice were summarised in Table 10-2. The greater sharing of lifestyles that occurs within an intentional community, through sharing spaces, meals, meetings etc., regularly exposes residents other people's diverse enactments of practice. This allows for the rapid circulation of elements, and (ideally) refinement towards goals of sustainability, which can take place in different ways: through sharing of different meanings of what constitutes the sustainable performance of a practice, passing on new competences in situations that facilitate learning-by-doing, and sharing new types of materials (goods or resources). Functioning at a 'meso', community-scale means hidden household practices become visible, yet the scale is not so large it diminishes the trust shared by community members. Furthermore, because intentional communities are people's homes, they are uniquely placed to expose the inconspicuous or hidden practices of daily household life to this scrutiny.

Chapter 2 described the encouragement of pro-environmental practices (as well as the sharing of goods and resources, and promotion of post-materialist values) amongst residents as one of the factors contributing to the sustainability of ecovillages and cohousing communities (Lietaert 2010; Marckmann, Gram-Hanssen & Christensen 2012; Meltzer 2005; Scheuer 2002; Szaraz 2015; Williams 2005b, 2008). Meltzer (2005) for instance describes a community empowerment model to explain the pro-environmental characteristics of cohousing communities. The use of SPT, and particularly the conception of elements of practice, in this thesis provides a unique examination of the dynamics of how this encouragement of pro-environmental (or pro-sustainable consumption) practices occurs.

In summary, when working towards sustainability goals, the collective-scale agency, combined with the deliberative creation and reflexive governance processes of the intentionally sustainable community provide an effective mechanism for community members to intervene to improve the sustainability of their everyday lives.

Intentional communities have many aspects which promote the creation of conditions for more sustainable daily practices. However, the very aspects of community life that enabled the households to improve their sustainability created difficulties as well. Cooperative ownership and/or management, whilst enabling the communities to act on a larger scale to shape infrastructures and social norms, also involved the whole community in decisions that previously would have been the preserve of individual households. Decision making could be slowed down whilst community members were convinced of the benefits of proposals. Most community members were aware of the potential for internal politics to hinder community decision making; this was an aspect which

frustrated many. However, this was seen as an inevitable part of participatory governance practices, and systems and training to guide consensus decision processes and encourage mindful communication were used to minimise the negative impacts. These downsides to more communal lifestyles represent barriers to the wider spread of intentionally sustainable communities, and highlight the importance of other pathways for influencing sustainable consumption practice in mainstream society.

How are Intentionally sustainable communities influencing sustainable consumption practices on a wider scale? (RQ4)

This research question was addressed in Chapter 9, drawing specifically on an exploration of the pathways through which Murundaka was influencing the sustainability of consumption practices on a wider scale. The choice to focus on Murundaka was due to the specific aims of the community to be an exemplar for sustainable living in the suburbs, and the extent of the engagement from Murundaka with the wider community (full reasons were provided in Chapter 9). In answering this question, influence was considered from three different viewpoints. Firstly, there was evidence of direct influence on the everyday practices of members of the wider community. There were many examples of Murundaka organising engagement activities, largely focused within the domains of community creation and food. These activities, which included gardening workshops, hosting community groups, and conducting tours and open days, provided opportunities to recruit members of the wider community into new sustainability practices, or share specific elements to incorporate into their existing practice.

Secondly, Murundaka indirectly influenced wider community practice by engaging with the professional practices of urban development professionals, who have a role in creating and managing key infrastructures within societies. A key role for a community such as Murundaka was as a real-world example that professionals could use to present a case for innovative ideas to decision makers. Whilst there was evidence of wider influence from both of these first two perspectives, it was clear that there is a limit to how much energy Murundaka can devote to these activities, given that residents still have their own work commitments and lives to get on with.

The third viewpoint was then to explore Murundaka as one project that forms part of a wider niche of intentionally sustainable communities. This offered insights regarding how intentionally sustainable communities as a wider niche can influence sustainable consumption practice. The use of Strategic Niche Management (SNM) literature to explore niche development and diffusion pathways highlighted that the influence of niche projects such as Murundaka can spread by creating more similar projects, increasing the number of people that participate in existing ones, and working to spread niche ideas to the regime. A key point made was that strengthening the networking within the niche – amongst Australian intentionally sustainable communities particularly – is necessary to

increase influence. Australian intentional communities have limited influence on mainstream sustainable consumption practices because there are so few of them (less than 0.001% of the Australian population) and they are not well networked. Furthermore, the mainstream households that they are seeking to influence aren't operating in the community-scale governance contexts of intentionally sustainable communities and so lack the trust and other factors that are critical to niche practices. The community-scale of operation is a key factor in lowering the environmental impact of intentionally sustainable communities, yet this limits the scope of the community to have a wider influence. These three perspectives all represent ways of multiplying the opportunities for practices and elements of practice that have evolved within these communities to increase their circulation.

10.2 Research contribution

These research questions were developed to provide answers to the broader aims of this research project: i) are intentionally sustainable communities an effective response to environmental issues? ii) how is sustainable consumption enacted in these communities? and iii) how they can contribute to the adoption of more sustainable consumption patterns on a wider scale? The objectives based on the literature were described in Section 2.6.2, and are shown here in Table 10-3. This section will consider the contribution of this research to answering these wider aims.

Table 10-3: Research objectives

O1	An improved evaluation of the measured environmental performance of these communities.
O2	Expand knowledge of grassroots innovations through considering new types of initiatives (intentionally sustainable communities) in new geographic contexts (Australia).
O3	Exploration of environmental sustainability innovations within the context of the Australian intentional community.
O4	An application of social practice theory to look at the varied innovations in everyday consumption that develop within the intentionally sustainable communities niche.
O5	Improved understanding of how an intentionally sustainable community could influence the sustainability of mainstream populations.

Are intentionally sustainable communities an effective response to environmental issues?

Intentional communities that had sustainable living aims were the empirical focus of this research. These were termed intentionally sustainable communities for the purpose of this thesis, but generally included ecovillages and cohousing communities. The findings of this research strongly

support the notion that intentionally sustainable communities are effectively responding to environmental issues by reducing consumption levels.

This research systematically collected and reviewed more ecological and carbon footprint assessments of intentional communities than any previous study, to improve the understanding of their measured environmental performance (Objective 1). The analysis indicated that meaningful changes to household consumption impacts were occurring in intentional communities. This provides three key contributions to the wider literature. First, it further justifies intentionally sustainable communities as sites of innovation in household consumption that should be supported and encouraged. Second, it establishes a benchmark collection of footprint assessments against which future analysis of intentional communities can be compared. Finally, it supports continuing research to understand how environmental and sustainability issues are addressed in these communities.

In order to understand the effectiveness of intentionally sustainable communities as a response to environmental issues in an Australian context, this research applied and expanded the concept of grassroots innovations through the exploration of new types of initiatives (intentional communities) in a new geographic context (Australia) (Objective 2). The mapping (Appendix A) and high-level niche assessment (Section 9.4.1) of Australian intentionally sustainable communities indicated that this grassroots niche was well established in Australia, with a long history of responding to environmental issues. However, it indicated certain aspects of niche development that could be further improved, such as the extent of internal niche networking between discrete niche projects.

How is sustainable consumption enacted in these communities?

This thesis has significantly expanded existing understanding of how members of Australian intentional communities enact sustainability in their everyday lives, through detailed empirical study (Objective 3). The ethnographic case studies of Bundagen and Murundaka have added to a rich vein of research regarding the intentional community movement in Australia, as neither of these communities had previously been studied in this way. In particular, the more contemporary cohousing model of intentional communities, as seen at Murundaka, has received very little research attention in Australia to date. Significantly, research focusing on environmental and sustainability concerns within Australian intentional communities has been limited. Those studies that have been carried out have tended to focus on specific aspects of sustainability, such as responses to thermal comfort (Strengers & Maller 2011) or behavioural choices (Miller & Bentley 2012), with Meltzer (2005) being the obvious exception to this. Australia provides a different cultural, geographic and political context to Europe and America, where most research on environmental sustainability in communities has occurred. It has a long communal tradition, large ecological footprints, large land area and a highly urbanised population.

This research supports Kunze's (2012) characterisation of intentional communities as 'living laboratories of communal and ecological living' (p.67). The case studies presented multiple examples of communities experimenting with different forms of sustainable living, in ways adapted to their specific local circumstance. The case study communities were successfully adopting more sustainable consumption patterns in everyday life across many consumption areas.

The use of the New Economics indicators for sustainable consumption as a high-level assessment tool to select the case study communities was a unique application of these indicators. The case study analysis firstly supported the results of the assessment, as the selected communities indeed were enacting sustainable consumption practices in multiple ways. Furthermore, the sustainable consumption strategies described by the indicators matched the empirical analysis of how sustainable consumption was enacted in the communities, as a diversity of strategies were implemented, such as strengthening community and developing a capacity for collective action, as well as direct sustainability actions targeted at reducing EFs. Given the paucity of frameworks to assess the contribution of activities towards sustainable consumption (identified in Section 2.3), the validation of these indicators is an important contribution of this thesis.

Analysis through the lens of practice theory provided a new conceptualisation of the scope of practices within Australian intentionally sustainable communities. In fact, the use of SPT to explore everyday consumption actions of residents in intentional communities in any context is largely unexplored (O4). This combination of theory and cases has provided new insights particularly because the members of these communities are intentionally, rather than unconsciously, engaged in shaping their everyday practices. This research contributed to this field in three ways:

- Firstly, the use of the interventions in practice framing led to the conceptualisation of the community members as both practitioners and policy-makers of everyday life. The case study communities were organised on a scale that gave the members much greater scope to influence the elements of practice than regular households. They had greater ability to shape and share community infrastructures, access competences held by a wide range of people, and share and formalise meanings on a community scale. At the same time, the communities were not so large that trust between community members is dissipated. This conceptualisation raises questions about the appropriate scale for attempts to intervene in practices. The appropriate scale is likely to depend upon the type of intervention. When re-crafting elements of practice, large-scale interventions that introduce new materials or spread particular competences may be appropriate, whilst attempts to influence the interlocking of practice systems are often context-dependent and require ongoing adaptation, and may better suit community-scale interventions.
- Secondly, the exploration of how intentionally sustainable communities intervene in their practices brought to the fore the importance not only of interventions that improved the sustainability of practices, but also those that enabled ongoing and reflexive interventions in practices to ensure they continue to evolve in a sustainable direction.

- Thirdly, the underexplored concept of communities as crucibles of practices was used to conceptualise the rapid mixing of elements that can occur within the common spaces of intentional communities. This provides a new understanding of the mechanisms that encourage pro-environmental actions within intentionally sustainable communities

How can intentionally sustainable communities contribute to the adoption of more sustainable consumption patterns on a wider scale?

This research gathered new knowledge about how intentionally sustainable communities can influence sustainable consumption patterns on a wider scale (O5) through empirical research with Murundaka and planning, housing and urban development professionals. Key potential pathways for influence identified were:

- spread sustainable consumption practices, or key elements of these practices, to members of the mainstream population,
- encourage the creation of more intentionally sustainable communities, and
- translate aspects of intentionally sustainable communities to new and existing neighbourhoods and multi-residential developments.

Perhaps the key pathway for communities is to increase the members of the mainstream population that are actively engaging with their alternative, sustainable consumption practices. As mentioned in Chapter 8, the case study communities can be seen as having a Community of Practice (CoP) focused on living sustainably. The more people that are part of that CoP, the greater the influence the community can exert. As discussed, people need to actively participate in sustainable consumption practices – learning by doing – to become effective carriers of particular practices. Inviting more people into workshops, supporting new intentional communities to form and promoting opportunities to stay at the community (e.g. Homestays like HelpX) are effective mechanisms that are already occurring but can be further promoted. Existing communities could focus on opportunities to expand the activities that are core to the community beyond their bounds to include nearby neighbours.

Given the issues of burnout that community members can face when placing too much focus on external engagement and not enough on community management and simply living, there is a strong driver to support interventions that encourage the creation of more intentionally sustainable communities. These can be both interventions from existing communities (as was seen at Murundaka), or from planning, housing and urban development professionals that have privileged roles in the provision of capital, land or expertise that can support the development of new communities.

The pathway with the greatest potential for influence is to encourage the uptake of aspects of intentionally sustainable communities within existing suburban neighbourhoods and multi-

residential dwellings. The complex ways that the different practices interlock within the case study communities means taking one idea and applying it in a different setting is complicated. Nevertheless, some potential interventions within existing suburban neighbourhoods and multi-residential dwellings could include:

- building supportive and enabling institutions and infrastructures for encouraging sustainable consumption
- encouraging the enactment of more of everyday life to occur in shared and public spaces
- supporting greater sharing of goods and resources with tool sharing libraries, co-working spaces, material reuse centres etc.

Another, potentially very powerful way to view the impacts of intentionally sustainable communities on mainstream society is to focus on their conceptual position as radical critiques of that society. Smith (2016), reflecting upon 12 years of grassroots innovations research, called for innovation research to take a more critical stance that views:

... innovation alternatives as bellwethers in societies: an active expression that points to what is not working with more established innovation models (p.487)

The sustainable consumption interventions that work in the particular context of an intentionally sustainable community will not necessarily transfer directly to the much more diverse world of mainstream society. Yet reflecting upon those interventions – e.g. community-level governance, consensus decision-making amongst peers, sharing of space, goods and resources, residents involved in creating their future homes – points to flaws in the existing systems and practices of society that have motivated these individuals to adopt such radically new practices.

10.3 Implications for policy and practice groups

This section will present the implications of this research for community practitioners, planning, housing and urban development policymakers and professionals, and policymakers concerned with sustainable consumption.

10.3.1 Implications for existing and future communities

This research highlighted the positive sustainability benefits that can be achieved by intentionally sustainable communities. This should provide encouragement for existing, and newly forming communities. The diverse array of interventions that directly improve the sustainability of household consumption can provide guidance and inspiration for forming and existing communities. A few clear points emerged for communities seeking to follow a sustainable living path:

- an explicit and accepted vision of community sustainability principles to guide the development of future practice is vital
- establishing sustainable infrastructure and systems of provision at the outset is a significant advantage
- having shared and semi-shared spaces where ordinary, normally inconspicuous parts of everyday life are practiced can be beneficial for the spread of meanings and competences amongst members
- communal, participatory governance practices are crucial, but challenging, aspects of community life. They allow the community to adapt as aspects of practice change over time.

Intentionally sustainable communities have a role to play in influencing change on a wider scale. This can occur through encouraging and supporting new communities to form, working to bring members of the wider (mainstream) community into the sustainable practices of the community, as well as working with, or lobbying, policy-makers to adopt aspects of sustainable community practice into wider policies and initiatives. Within the Australian intentionally sustainable community niche there is space for a stronger intermediary organisation or network that ties the existing communities together and can act as a cohesive link to wider policy debates.

10.3.2 Planning, housing and urban development policy makers and other professionals

This research has shown that cohousing and ecovillage developments can create circumstances to deliver effective changes to household consumption practices. There are of course potential downsides and issues along with the benefits. However, the research demonstrated that innovative solutions to sustainability issues do develop from the grassroots when given the opportunity. This suggests that a greater prevalence of intentionally sustainable communities, or other innovative housing types that share certain characteristics, i.e. housing cooperatives, deliberative developments, would be part of a healthy housing mix.

The case study communities developed from specific contexts, so it is difficult to generalise, but their creation emerged from the alignment of an unusual set of circumstances. The long pathways to creation, and the number of communities that stall along the way, indicates that planning and housing professionals can play important roles in either supporting or hindering the development of innovative grassroots communities. Given the potential benefits from these communities, both to residents and to the surrounding neighbourhoods, planning and housing professionals should increase their understanding of these community types. It is incumbent upon people in these positions to ensure that housing and planning policy, regulations and plans do not negatively impact on the potential for grassroots niche housing communities to develop. Initiatives to encourage

further diversity and community participation in housing through financing, land acquisition or development support could also deliver positive outcomes.

Regarding the design of new developments, the findings from these cases and indications from wider research on ecovillages and cohousing communities indicates that finding ways to effectively integrate shared, and semi-shared spaces into designs can deliver multiple benefits. This isn't a simple task, as it is the way that shared spaces interlink with shared governance practices, strong trust and social capital, and meanings and competences related to sharing that are key to their success in the communities studied. Nevertheless, there is a role for designers and developers to explain potential benefits to future residents. This is particularly relevant in deliberative developments which share some characteristics with intentional communities, i.e. future resident involvement in design stages

10.3.3 Sustainable household consumption policy makers

Grassroots innovations scholars (Frantzeskaki, Dumitru, Anguelovski, et al. 2016) highlight the key role that policymakers play in translating new practices pioneered in radical niches into mainstream settings. This may be through adopting new practices into policy as appropriate, or assisting existing grassroots sites (i.e. local intentional communities, food co-operatives, community gardens) in spreading practices and elements of practice to mainstream communities.

This research supports social practice theory as an extremely useful framework for understanding consumption practices at a community level and could be adopted more widely in making policy decisions. Its use in this research suggests that meso-level interventions at a scale that allows close interaction between practitioners and policy-makers may be an avenue worth pursuing. The key is to enable action on a sufficiently large scale, without losing the social benefits (e.g. trust and personal connection) that come from community-level action. This could take the form of active engagement between local governments and neighbourhoods in a way that creates explicit sustainable consumption commitments from both community and government, and allows ongoing feedback between practitioners and policymakers.

Finally, this research has highlighted that many household consumption practices are hidden, and that exposing them to the scrutiny of others can lead to the spread of new understandings and competences that alter practice.

10.4 Limitations of the research

As with many research projects of this nature, the exploration of the practices in intentionally sustainable housing communities faced a number of limitations. The interview participants in the research were self-selecting, and only a small proportion of the total community members were interviewed. This will have resulted in a bias on the type of residents interviewed.

The community members were provided with some details about the purpose of the research prior to agreeing to be interviewed. Further, the interviews were roughly one hour long, so involved a non-trivial time commitment. Firstly, the time commitment for the interviews could have affected the number and type of people available to participate. However staying with the communities for close to one week and being available during the day and evening helped mitigate this. The interviewees knew the research was interested in everyday sustainability within their community, so it is reasonable to assume that many of the people that volunteered to be interviewed had a particular interest in ideas of sustainability or a particular passion for talking about their community. Therefore, the image formed of the various practices within the communities, and presented in this thesis, was particularly influenced by this selection of interviewees.

The question of how much can be inferred from these interviews about the practices and elements carried by other members of the communities who were not spoken to, and about the distribution of different sustainability practices across the whole community, has been considered in this research. This is recognised to be a limiting factor of this research, but it is a common limitation of case studies more generally, as was noted with reference to Yin (2009) in Chapter 4. Despite these limitations, there are a number of reasons that provide confidence in the validity of the descriptions and conclusions presented in this thesis. Firstly, the research participants had a diversity of viewpoints, which indicated that there wasn't simply a 'party line' about the communities being expressed. Some people were cautious about discussing flaws in their communities, whilst others were very comfortable (happy, even) describing failures, or areas of community life that were not very sustainable. Some were clearly very passionate about sustainability or their intentional community, and were very articulate at discussing it with 'outsiders'. For example, interviewees included members of the Bundagen environment committee, or the energy and resources group at Murundaka. However, other interviewees were less deeply involved in driving sustainability within the communities, and offered different perspectives. The community members were also in reasonably informed positions when making generalisations about other community members, given the strong interconnections within the group. Regular community meetings, deeper reflection and visioning sessions, and the understandings that arise from sharing spaces with other members of the community lent authority to interviewees views on wider community matters. Finally, the participant observation provided an alternative source of information to verify the

information provided in the interviews. It is worth noting that there is greater confidence that the practices described for Murundaka were representative of the community, for two reasons. Firstly, the interview sample represented a larger part of the population. Secondly, the community is physically much smaller than Bundagen, so it was easier for participant observation of the community to be more extensive.

There are two limitations from the research that arise from choosing to focus on intentional community residents to examine household practices. The first is the difficulty in knowing what the impact of living in the intentionally sustainable community has on any household practices (or more specifically any reduction in the environmental footprint of the households) as opposed to the same household living in a different setting. The question arises: would all the people interviewed have been carrying largely similar elements within their household if they were in mainstream communities? Perhaps the community was just acting as a container for people who shared similar pro-environmental values? These are relevant questions that could be addressed in future research.

The second limitation is whether people with the motivation to join an intentional community are the right kinds of people on which to conduct research concerned with improving the sustainability of household consumption. Galvin (2013) found that a small minority of high consumption households are responsible for around half of space heating energy use, whilst the fifth of households that are the lightest users consume only 3% of space heating energy. This is not an either/or proposition; there is value in researching both the (un)sustainability of highly motivated and high consumption households. In fact, one of the underlying premises of the research for this thesis was that a better understanding of how 'sustainable' households consume can inform interventions within the most unsustainable households. However, the research by Galvin (2013) does suggest that understanding and changing the consumption practices of the highest consuming households is an important area for further focus. In addition, future research could centre more specifically on how practices common in intentionally sustainable communities could spread to the highest consuming households.

A limitation that emerged through the use of practice theory within the community context was that it did not draw attention to the interpersonal dynamics between community members, as it focuses on decentring the individual. Yet, it seemed clear that different people within the community had different levels of influence within the community, whether this would be due to leadership, charisma, power etc. This would influence the circulation of elements throughout the community in unknown ways, but the SPT framing focused attention on other areas.

10.5 Next steps: Questions for future research

The findings of this research raise new questions that present new areas for future research. Seven areas for future investigation appear particularly promising: i) Wider application of the theoretical and analytical approach used, ii) EF studies of Australian intentionally sustainable communities, iii) Consideration of the 'ecological footprint of a practice', iv) research into households before and after joining intentional communities, v) deep or broad surveys of sustainable practices of intentional communities, vi) greater exploration of the intentionally sustainable communities niche in Australia, and vii) further elucidation of the role of power and other interpersonal dynamics in the spread of practices.

The theoretical analysis of practices within intentionally sustainable communities undertaken for this thesis could readily be applied to other types of communities, such as less intentional physical neighbourhoods, or online or virtual communities. Clearly structured exploration and categorisation of domains, practices and elements, combined with the identification of intervention points and the nature of environmental impacts provided a robust and illuminating analysis in the context of the cases study communities. This approach has a much wider application within sustainable consumption research.

Chapter 5 highlighted the lack of studies that measured the EFs (or related metrics) of members of Australian intentional communities. Given the usefulness of indicators such as this as communication and research tools, additional investigation in this area would be a useful contribution to sustainable consumption and intentional communities research.

Also discussed in Chapter 5 was the concept of measuring the 'ecological footprint of a practice'. As noted, comparing the EFs of different, but related, practices would pose numerous scoping, boundary setting and measurement challenges. Nevertheless, it would provide a powerful tool for comparing different types of practice interventions. This concept warrants further consideration in future research that builds upon initial work examining comparable practices by Retamal and Schandl (2017), and Martin and Shaheen (2011).

Many of the identified limitations of this research represent promising paths for future research. Although community members were asked how their practices had changed since joining the community in this research, the process of change that occurs when moving into a community could be explored in much greater depth. A significant contribution could be made by following a number of household practices before and after, or throughout the process of moving into an intentionally sustainable community, to understand how practices change within that household. This could be combined with an EF or similar assessments to try to quantify the types of changes that could occur. Given the long periods of time that communities take to form, this presents some challenges. It may

potentially be easier in regions such as Northern Europe and North America, where the cohousing development process is more widespread and streamlined.

Another limitation previously noted, relates to the understanding of the spread of practices across the case study communities that could be implied from the interview data. Survey research that tried to reach all members of a particular community could be a useful future research project, to better understand the diversity of practices within the community ecosystem. This could potentially be extended beyond single communities to look at the many intentional communities in Australia, although survey research of this type that has previously been conducted in different geographic settings would often be completed by a single community member on behalf of the whole community (Meijering, Huigen & Van Hoven 2007). The in-depth understanding of practices provided by this research could be particularly useful for informing the design of this kind of survey.

The scope of this research project did not extend to a detailed exploration of Australian intentional communities as a grassroots niche. It did reinforce that these communities represent a niche with a long history of grassroots-level activities to address environmental and social issues. There is significant scope for further research to explore historical interactions between this niche and the wider development regime or consider current niche development processes in much greater detail than was discussed in Chapter 9.

Wolfram and Frantzeskaki (2016) describe some scholars linking SNM as a conceptual reference with social innovation theories (such as SPT) in order to better understand locally embedded niches. Intentionally sustainable communities such as Murundaka are clearly rooted in a specific local spatial context. The use of SPT to examine how grassroots innovations can influence wider community and professional practices within this chapter did provide useful insights and is an approach worthy of further investigation.

Scholars have made recent efforts to develop an understanding of the role of power in theories of practice (Watson 2016). There is further work to be done to theorise the role of power and other interpersonal dynamics in influencing the spread of practices and elements, both in intentional community settings and on a wider scale.

10.6 Closing thoughts

The scale of negative environmental impacts linked to everyday household consumption is huge and unsustainable. Yet it is inspiring to explore the manner in which regular citizens can work together to create solutions to these seemingly overwhelming issues. In many ways, it is this inspiration that is 'the most powerful form of activism' evident within intentionally sustainable

communities. Because as this research makes clear, this is not 'just' about the way we live. Everyday life is a complex interaction of past, current and future practices and the meanings, competences and materials that combine in ever-evolving ways to make up these practices. Making lasting changes to the way we live can be an incredible challenge. Studying intentionally sustainable communities shows that with a strong vision, collective action, perseverance and maybe even a bit of good fortune, there are ways to create a more sustainable way for us to live.

Appendices

Appendix A - Initiative mapping database

Appendix B - Research information sheet

Appendix C - Interview participant consent form

Appendix D - Research questions

Appendix E - Ecological footprint survey

Appendix F - Footprint survey results

Appendix G – Additional information about Bundagen Cooperative Community

Appendix H – Additional information about Murundaka Cohousing Community

Appendix I – Interview excerpt

Appendix J – Murundaka architectural drawings

Appendix A. Initiative mapping database shortlist

Name Type City State	Resid ents	Forma tion Stage	Foundi ng Year	Geographi c setting	Community information							New Economics Indicators -					Open Day	website	Case Study Site?	
					Description	Shared Facilities	Decision Making	Financing Style	Dietary Customs	Land Area (ha)	% food grown on-site	Developing local economy	Reducing ecological footprint	Building community	Enabling collaboration	New infrastructures of provision				
Cohousing Co-operative Ltd (Cohousing) (South Hobart, Tasmania)	10-20.	Establi shed	1992	RA2 - Inner Regional				cohousing cooperative (do not own property)					Co-working space located in building		Common house and facilities shared by all residents.	Multiple organisations have been supported by the Co-operative including: South Hobart Progress Association, South Hobart/Cascades Community Development Initiative, Cascades Community Association, Cascades Playgroup, Hobart Organic Food Co-operative.	Uses a different system of housing provision - cohousing.		http://www.cohousingcoop.org.au/Cohousing_Co-operative/Home.html	Yes
Digger Street (Cohousing) (Cairns, QLD)	10-20.	Establi shed	2008	RA3 - Outer Regional	Digger Street aims to create a sanctuary for the artist to immerse themselves in their art. Situated in the tropics where balmy winter days make way for the tempest of the wet. Focus is encouraged in the direction of the artist and the land both physically, emotionally, creatively. Digger Street, is a self-funding residential space used primarily to house artists and their passion. A Social Experiment - Remove the Fences, Take off the Doors, Develop Trust, Don't live in Fear	dining guest room(s) laundry workshop community gardens or farms	Moving from a democratic to consensus	Self-funded at \$180 per week including food, bills, internet and phone (All included)	Vegetarian	2	10	Participant in the local LETS scheme	By only buying in bulk have we reduced our consumption of waste packaging, become shopping bag free, reduced the number of Council picks ups by 75% Strong emphasis on healthy, vegetarian and organic bulk food	Moving from democratic to consensus decision making Has communal dinners most nights Short stay community model - over 1500 people from around the world have been guests - well-developed online presence - created more common ground allowing for community gardens, chickens and open areas for kids to run further without crossing the road.	Providing space for artistic collaborations to occur	Creating 'free-range humans' - Be actively involved in learning new ways to provide food, pay bills, use technology in a way not achievable in the Single Unit House	Last Sunday of every month from 11am - Market day every Thursday	http://diggerstreet.com	Yes	
Pinakrri (Cohousing) (Hamilton Hill, WA)	20-50	Establi shed	1991	RA1 - Major Cities	A cohousing designed intentional community in the 'burbs of Fremantle, Western Australia. Part publicly funded, part private equity, Pinakrri provides a range of tenures from affordable rental to ownership. Pinakrri is associated with the Federation of Housing Collectives in WA, Community Housing Coalition WA, and Intentional Communities Australia.	guest room(s) laundry dining workshop community gardens or farms	Supported by Nonviolent Communication and informed by Sociocracy. Delegated authority to manage property and social projects.	Land owned privately (strata title and freehold) plus publicly funded (deed of trust) - members have own finances	Vegetarian	0.5	15		Community grey water system sustainable passive solar design	Strong emphasis on consensus decision making Pinakrri is a Nyangamarta word meaning to pay close attention or listen deeply (lit. 'ear stand'). Activities include regular shared meals and social events including a monthly open house community dinner, house concerts, Halloween, parties, tours, sustainability workshops, listening/sharing circles.	A typical week might see a steady flow of visitors as well as residents: tradespeople, friends, relatives, supporters, WWOOFers and other guests from all over the world, TAFE students, tour groups, kids coming over to play, friends coming for dinner and adult children returning for a visit to a place they very much still think of as 'home'.		Monthly open house community dinner	http://www.pinakrri.org.au	Yes	
Murundaka Cohousing (Cohousing) (Heidelberg Heights, Vic)	35-40	Establi shed	2009	RA1 - Major Cities		laundry guest room(s) dining theatrette / TV room workshop community gardens or farms library	Decision is by consensus using a modified sociocracy model	Common Equity Rental Co-op: Members income must be below a certain threshold and rent is generally 25% of income.		0.5	10	Co-working space located in building	Environmentally Sustainable Design • Shared facilities make it easier for residents to live sustainably by reducing resource use. • Rainwater harvesting and solar collection. • Highly permeable site to reduce storm-water run-off. • Solar orientation to reduce the need for artificial lighting and heating or cooling.	Land and units owned by coop - all residents rent from coop The residents are currently agreeing on processes for decision making and management of the neighbourhood. Decision is by consensus using a modified sociocracy model. Regular meetings are held with input encouraged from all members.	"In the coming year we hope to hold open mornings and other community events to help introduce the idea of sustainable cohousing neighbourhoods to everyone!"	Uses a new system of housing provision - cohousing. Also works on long term secure rental model rather than traditional ownership		http://murundakacohousing.org.au/	Yes	
Cascade Cohousing (Cohousing) (South Hobart, Tasmania)	36	Establi shed	1991	RA2 - Inner Regional		dining guest room(s) theatrette / TV room laundry workshop community gardens or farms	Consensus based with all residents having a say, fall back to vote of unit holders in certain circumstances	Strata title - Members have independent finances	Vegetarian	1	0		The houses at Cascade Cohousing were built to be energy efficient and consideration of "environmental impact" was part of the process of design and construction. Most houses are constructed from aerated concrete blocks or from timber and have two stories. All houses have good solar access from the north and many have features such as greenhouses for trapping the sun's heat. 50% of the group are vegetarian	Consensus based decision making We run common meals (in a common house) 3 nights a week and they are very popular. Common meals are one of our greatest successes and are at the core of our common values. Hold a working bee once a month for construction and maintenance Common social activities include film and video watching, games evenings, eating, Morris dancing, gardening and playing cricket with the kids. We have two regular parties each year (plus other private or spontaneous ones) at mid-winter and mid-summer.	Uses a different system of housing provision - cohousing.	Sunday or by arrangemen t	http://www.cascadecohousing.com/	Yes		
Christie Walk (Cohousing) (Adelaide, SA)	40	Establi shed	1999	RA1 - Major Cities	Christie Walk is a medium density housing development located in downtown Adelaide which combines many ecologically sustainable and community enhancing features. It was initiated by UEA and serves as a demonstration site to show how cities could be built.		By consensus	Members have independent finances. Future residents formed the building company with the architect to construct			620	?	This big picture of global thinking is realised in many details ranging from the capture of stormwater to the use of solar electricity and recycled and non-toxic building materials. Designed around 5 Environmental Performance Criteria	Consensus decision making The community aspect is important in a couple of ways. On the one hand, in the finished development the architecture and urban design fosters social interaction and a sense of community by providing a layout that is both free from traffic and provides a number of convivial outdoor places to gather informally or to sit quietly alone. On the other hand, the fact that Christie Walk exists at all is due to the power of community activism and the commitment of individual Australians prepared to work together to achieve something out of the ordinary. 1-3 shared community meals per month	Inner city location and design encourage greater reliance on walking. Use of straw bale for housing design	Book a paid walking tour	http://www.urbanecology.org.au http://ecopolis.com.au http://ecopolis/Christie_Walk.html	Yes		
Belbunya Ecovillage (Ecovillage) (Bell Park, QLD)	20	Establi shed	2008	RA2 - Inner Regional	Short description: Bellbunya Community is an ecological and consciously evolving community, established to model ways to create a relocated and sustainable future. Our mission is to be a deeply connected intentional community, nurturing each other's highest potential, - exploring possibilities of living in ways that are spiritually, socially, environmentally and economically sustaining, and - sharing and engaging with the world.	guest room(s) dining theatrette / TV room workshop pool renewable energy generation community gardens or farms	Consensus decision- making	Community land trust	Organic food, Low food miles Organic Low Food Miles	16	10	Aim to buy local with low food miles Enterprise development is at the very initial stages, with encouragement from the community to develop collaborative sustainable enterprises. Those currently in the start-up phases include a local-food experience restaurant and development of the eco-retreat and sustainability conference centre in conjunction with the ASC. On the agenda is to form partnerships with local enterprises, eco-farming and utilising the commercial kitchen to value-add local and community farm products.	Aim for 90% of food grown onsite 100% renewable energy reduction in waste disposal	Shared meals: Dinner each night and Saturday lunch Land held in common Consensus decision making process	Belbunya community has decided to adopt and trial sociocracy as a form of governance, with decisions being made by constructive consensus. Circles, and people within circles, take responsibility for an area of the community and bring well- constructed proposals back to the community as a whole, with the process continually refining.	?	Monthly working bee & site tour	http://www.belbunya.org.au/	Yes	
Aldinga Arts Ecovillage (Ecovillage) (Aldinga, SA)	250	Establi shed	1990	RA1 - Major Cities	The Aldinga Arts Ecovillage is a sustainable housing development located in a suburb south of Adelaide, South Australia. It has an interesting history that, over nearly 25 years, has taken it from its birth as a			Community Title		18		10 businesses operate from the site	Building Design guidelines specifying high standards of environmental performance	Land held in common	Neighbourhood group co-ordinators in place to encourage collaboration between neighbourhoods (clusters)	Designed on permaculture principles			Yes	

Name Type City State	Residents	Formation Stage	Founding Year	Geographic setting	Community information							New Economics Indicators -					Open Day	website	Case Study Site?	
					Description	Shared Facilities	Decision Making	Financing Style	Dietary Customs	Land Area (ha)	% food grown on-site	Developing local economy	Reducing ecological footprint	Building community	Enabling collaboration	New infrastructures of provision				
					concept in the minds of artists to the vibrant, growing Village you can see today. Our Village is an intentional community based around the principles of permaculture, with a focus on arts and the environment.															
Bundagen (Ecovillage) (Bundagen, NSW)	110	Established	1981	RA2 - Inner Regional	three guiding principles: social harmony, environmental responsibility, and economic independence.	library food co-op meditation space community gardens or farms	Modified consensus	Rural cooperative			313		Large number of houses constructed from locally sourced materials e.g. mudbrick A number of businesses on-site:	Bundagen is independent of mains water, sewerage and electricity. We rely on dams and rain-water tanks and use alternative technology, such as solar power and composting toilets. Campaign for formation of Bongil Bongil National Park & signed over 50% of land to a conservation agreement	Land held in common (rural cooperative) Modified consensus decision making Apart from meetings and regular working bees, café and the beach, members come together to play volleyball or soccer, for yoga, chi gong or to sing, play music, or to meditate. We have an active weeding group and land care projects underway. There is also a playschool in the renovated dairy bails where our youngest residents get together each week	Host of and organiser of 2011 AICC conference - making an effort to enhance collaboration We have monthly community meetings, which deal with everyday matters, and four general meetings a year to address major concerns. A group of fifteen annually elected co-ordinators, meet monthly and take responsibility for specific areas of administration	Food cooperative on-site Encouraging of housing self-provision Off-grid for water, sewage & electricity	Weekly cafe	http://bundagen.com.au/	Yes
Crystal Waters Permaculture Village (Ecovillage) (Conondale, QLD)	240	Established	1985	RA2 - Inner Regional			As per Community Titles Act	Individual title & 80% of land owned in common			259	35	Many businesses operate from CW: foresters, mail-order businesses (books, organic gardening supplies), carpenters, builders, an electrician, permaculture course providers and consultants, nurseries, caterers, craftspeople, architects, entertainers, a baker, bed-and-breakfast and homestay accommodations, furniture manufacturers, and ecovillage designer.	Designed on permaculture principles. Many innovative ideas in building, wastewater, water, agriculture, and nature conservation are evident	80% of land held and managed in common	Hosts regular ecovillage and permaculture design courses		Crystal Waters Market first Saturday of every month	crystalwaters.org.au/	Yes
Jindibah Intentional Community (Ecovillage) (Bangalow, NSW)	36	Established	1994	RA2 - Inner Regional	The intention of the founders of the Jindibah Community is that this community reflects the 'Triple Bottom Line' principles of finding a sustainable balance between social, environmental and economic life - remembering that if it's not fun, it's probably not sustainable.		By consensus (Ideally, but not necessarily 100%)	Individual community member(s) (Community Title structure. Members have title to their lots)			46	15	Our aim is to establish a way of self-funding most of the maintenance of the property. We are creating or enhancing community resources that are shared by members to facilitate income generation, e.g. yoga lessons, conflict resolution courses, or growing fruit and veggies for the community, and neighbours.	For both household use and transport, our intent is to run on clean energy when the technology becomes economically viable. To reduce per capita CO2 emissions to below the global target of 2 tonnes per person, we aim to stop using electricity generated by burning coal and migrate our transport away from burning oil. A solar energy farm is planned to generate 100% clean electricity to meet our needs during the day. Excess electricity will be returned to the grid. When available, EV's and PHEV's will be recharged at off-peak rates at night. Ultimately this system may be enhanced with wind and energy storage	Modified consensus decision making	Jindi-net broadband services for the region		http://www.jindibah-community.org/	Yes	
Tuntable Falls (Ecovillage) (Nimbin, NSW)	50	Established	1973	RA2 - Inner Regional			majority rule as a guide, ultimately up to Board of Coordinators)	Members have independent finance Other (Full residential levy \$500; reductions for hrs wk p.a.etc					Tuntable Falls local primary school	Off-grid? Focus on conservation, preservation and minimal impact	Land held and managed in common Community owned village centre with communal kitchen, and meeting spaces	Hosts "Friday Night Cafe", "Saturday Dining on the Patio" and "Sunday Family Cafe" to encourage interaction with wider community	Off-grid for water, sewage & electricity? Created primary school	Friday Night Cafe, Saturday Dining on the Patio and Sunday Family Cafe	http://www.byronevents.net/tuntablefalls/index.html	Yes
Moora Moora Community (Ecovillage) (Healesville, Vic)	65	Established	1973	RA2 - Inner Regional	Moora Moora is a co-operative residential community made up of a diverse group of about forty-five adults and twenty children. We intentionally choose to live together in six small clusters or hamlets located on a beautiful, cooperatively owned, 245 hectare property situated at an altitude of 700 metres on the top of Mount Toolebewong.	quest room(s) dining renewable energy generation community gardens or farms		Cooperative			245	10	CSA previously operating (farmers in Canada for 2 years) Has had on site schools at times	Off-grid (solar) Lot of commuting to Melbourne by residents	Land held in common (community title) which creates pressure to create community On-site school - great community hub	Host of and organiser of 2013 AICC conference - making an effort to enhance collaboration	Off-grid for water, sewage & electricity	First Sunday of every month - 1pm	http://mooramooraa.org.au/	Yes

Appendix B. Research Information Sheet: Grassroots sustainable housing initiatives in Australia

What is this research about?

Matthew Daly, a doctoral student at the Institute for Sustainable Futures of the University of Technology, Sydney, is visiting your community to conduct focus groups, interviews and observe everyday life for his doctoral research project 'Grassroots sustainable housing initiatives in Australia: Transitioning to environmentally sustainable consumption patterns.



The purpose of the research is to study sustainable housing initiatives, such as eco-villages, and co-housing communities, as sites of sustainable consumption practices. The first phase of the research collected publicly available information on existing and emerging initiatives and communities, to provide a snapshot of the extent and scope of these types of environmentally conscious initiatives. The second phase will develop case studies of a number of willing initiatives to measure their ecological footprint, and learn about their environmentally beneficial practices and how these interact with the wider community.

Taking part – What does it mean to you?

Your participation will vary depending on the level of involvement you wish to have. The researcher (Matthew Daly) will be staying with your community for a number of days, during which time he will be organising a focus group, a follow-up interview with those who agree, and will be observing and participating in everyday life within your community. Prior to the visit, a survey is being distributed to collect household data to assess the ecological footprint of your community. The survey will be collected during the researchers visit. The survey is expected to take approximately 30-60 min of your time. Your participation in the focus group and interview, should you wish to attend or participate, will take a total of no more than 2 hours and 1 hour of your time, respectively.



What information will be collected?

Audio recordings, photos and/or videos of the focus group, individual interviews, and observations may be taken for the purposes of: review and reflection by the researchers, and to ensure information gathered during the course of the research is accurately represented.

Recordings will only be accessible to the research team, and will be stored securely.

Should you prefer not to be recorded visually, you can indicate this on the consent form.

How will this research be used?

The findings will be published in a number of forms, including a doctoral dissertation, journal articles, books and presentations, in both electronic and hard copy. Should you not wish for video and/or photographic recordings to be published, you can indicate this on the consent form. Audio recordings will not be published.

Ethical Practice

You are free to choose whether you would like information to be published in a way which ensures you and your community remain anonymous, whether your community can be named but you personally wish to remain anonymous, or whether the information you provide can be quoted and be attributable to you when it is published. You will be given an opportunity to express your preference in the provided consent form. You will be given the opportunity, prior to publication, to check any text that is to be used in the published report that identifies you or your initiative to ensure the meaning was interpreted correctly by the researcher. Ecological footprint data collected by the survey will be used anonymously.

Further Information

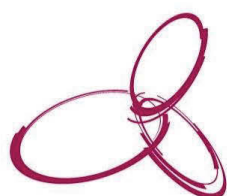
If you have any concerns or questions about the research you can contact Matthew Daly (0415 455 304 or matthew.daly@uts.edu.au) or Dr Chris Riedy (Matthew's Principal Supervisor, 02 9514 4964 or christopher.riedy@uts.edu.au) at the Institute for Sustainable Futures, UTS.

You are free to withdraw your participation from this research project at any time without giving a reason.

Research ethics – Who can I talk to if I have concerns?

This study has been approved by the University of Technology, Sydney, Human Research Ethics Committee (UTS HREC REF NO. 2013000631). If you have any complaints or reservations about any aspect of your participation in this research you may contact the UTS Ethics Committee through the Research Ethics Officer, [tel: 02 9514 9772]. Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

Appendix C. Participant Consent Forms



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**UNIVERSITY OF
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CONSENT FORM - Grassroots sustainable housing initiatives in Australia: Transitioning to environmentally sustainable consumption patterns

I..... agree to participate in the research being conducted by Matthew Daly, a doctoral student from the Institute for Sustainable Futures of the University of Technology, Sydney. I understand that the purpose of the research is to study sustainable housing initiatives, such as eco-villages, and co-housing communities, as sites of sustainable consumption practices.

I understand that I can choose the level of involvement I wish to have, and that my participation may involve a focus group, a follow-up interview if agreed to, and being observed whilst undertaking everyday activities (cross out any which you do not agree to). I understand that my participation in these activities will take approximately 1.5 – 3 hours of my time.

I understand that the researcher may take an audio recording of my participation in the research to ensure information is represented accurately. I also understand that the researcher may take photos which may be published in the ways discussed on the information sheet.

Should you not wish for photos of you to be published, please indicate below:

- I do not wish to have photos of me used in publications

In addition, video recording may be used as an additional method of collecting data. Please indicate below if you consent to being video recorded (tick box which applies):

Video recording *Yes, I'm ok with it* *Yes, but don't publish it* *No thanks*

I understand that I will be given the opportunity, prior to publication, to check any text that is to be used in published research that identifies me or my initiative to ensure the meaning was interpreted correctly by the researcher. I consent to the information I provide being used for this research project in the following manner (tick options for which consent is given):

- The information I provide may be quoted in publications and attributed to me using the name and position details specified below*
- The research data gathered from this project will be published in a form that does not identify me in any way, but the community of which I am a member can be identified*

- The research data gathered from this project will be published in a form that does not identify me or the community of which I am a member in any way.*

I am aware that I can contact Matthew Daly (0415 455 304) or Dr Chris Riedy (Matthew's Principal Supervisor, 02 9514 4964) if I have any concerns about the research. I also understand that I am free to withdraw my participation from this research project at any time I wish without giving a reason.

I have read the Information Sheet for the project and Matthew Daly has answered any questions I have fully and clearly.

Signature Date

Initiative/Community / position

Research ethics

This study has been approved by the University of Technology, Sydney, Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research you may contact the UTS Ethics Committee through the Research Ethics Officer, [tel: 02 9514 9772]. Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.



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Survey Consent Form

I agree to participate in the research being conducted by Matthew Daly, a doctoral student from the Institute for Sustainable Futures of the University of Technology, Sydney. I understand that the purpose of the research is to study sustainable housing initiatives, such as eco-villages, and co-housing communities, as sites of sustainable consumption practices.

I understand that the information collected in this survey will be used to calculate the ecological footprint of my community. I understand that my participation in these activities will take approximately 30 – 60 min of my time.

I understand that all data collected in this survey will be used anonymously, and I consent to the information I provide being used in this research project for the calculation of the community ecological footprint.

I am aware that I can contact Matthew Daly (0415 455 304) or Dr Chris Riedy (Matthew's Principal Supervisor, 02 9514 4964) if I have any concerns about the research. I also understand that I am free to withdraw my participation from this research project at any time I wish without giving a reason.

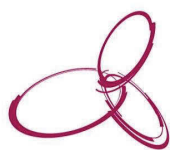
I have read the Information Sheet for the project and Matthew Daly has answered any questions I have fully and clearly.

Signature Date

Initiative/Community / position

Research ethics

This study has been approved by the University of Technology, Sydney, Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research you may contact the UTS Ethics Committee through the Research Ethics Officer, [tel: 029514 9772]. Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.



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CONSENT FORM - Grassroots sustainable housing initiatives in Australia: Transitioning to environmentally sustainable consumption patterns

I agree to participate in the research being conducted by Matthew Daly, a doctoral student from the Institute for Sustainable Futures of the University of Technology, Sydney. I understand that the purpose of the research is to study sustainable housing initiatives, such as eco-villages, and co-housing communities, as sites of sustainable consumption practices, and as an innovative niche.

I understand that that my participation will involve an individual interview. I understand that my participation will take approximately 15 – 45 minutes of my time. I understand that the researcher may take an audio recording of my participation in the research to ensure information is represented accurately.

I understand that I will be given the opportunity, prior to publication, to check any text that is to be used in published research that identifies me or my organisation to ensure the meaning was interpreted correctly by the researcher. I consent to the information I provide being used for this research project in the following manner (tick options for which consent is given):

- The information I provide may be quoted in publications and attributed to me using the name and position details specified below*
- The research data gathered from this project will be published in a form that does not identify me in any way, but the organisation of which I am a member can be identified*
- The research data gathered from this project will be published in a form that does not identify me or the community of which I am a member in any way.*

I am aware that I can contact Matthew Daly (0415 455 304) or Dr Chris Riedy (Matthew's Principal Supervisor, 02 9514 4964) if I have any concerns about the research. I also understand that I am free to withdraw my participation from this research project at any time I wish without giving a reason.

I have read the Information Sheet for the project and Matthew Daly has answered any questions I have fully and clearly.

Signature Date

Initiative/Community / position

Research ethics

This study has been (insert 'approved' here once ethics approval is confirmed) by the University of Technology, Sydney, Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research you may contact the UTS Ethics Committee through the Research Ethics Officer, [tel: 02 9514 9615]. Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

Appendix D. Interview Discussion Guide

GROUP DISCUSSION GUIDE – MURUNDAKA

Make the script as personal and friendly as possible, it would also be good to introduce a tool that allows shy people to speak out – e.g. yellow stickies

Item	Timing (mins)	Resources	Notes
<p>Consent</p> <p>Would it be OK if I recorded our discussions, I want to make sure that I capture all the interesting things that you have to say for my research.</p> <p>My research project has been approved by the ethics committee at UTS, and designed to protect your rights for privacy.</p> <p>I Ask them to sign the consent forms (or get verbal consent and ask to sign at the end).</p> <p>Let everyone know when you start recording/filming.</p>	5	Butchers paper/notebook (?), pens, name tags	
<p>Welcome/ Introduction</p> <p>introduce myself, and where I'm from UTS/ISF, and say a little about myself growing up in an 'alternative community'</p> <p>Communities like Murundaka are a key focus of my research and I hope to show how they contribute to society.</p> <p>During today discussion I want to learn about the environmentally beneficial practices of everyday life in your community</p>	5		
Intro total	10		
QUESTIONS			

Item		Timing (mins)	Resources	Notes
Opening	<i>To start with I'd like to find out a little about each of you. Can we go around the table so that each person can say their name; and how long you've been involved with Murundaka? What is the most important contribution that Murundaka makes to your everyday life?</i>	15		
	(What kind of things are done at Murundaka that are driven by sustainability or a wish to reduce the environmental impact of the community?)			
Key questions and discussion	<i>Some of you mentioned sustainability and environmental impact (only say this if it occurred). In my research I'm really interested in how and why people try to live in a more sustainable manner (or reduce their environmental impact) in a community like yours.</i> Maybe you could tell me a bit more about the history of Murundaka, how it was formed and has evolved over the last few years? And how collectively and as individuals you have tried to achieve sustainable lifestyles? E.g. think of systems that you have set up, alternative technologies that are used, community rules encourage low-impact behaviour, maybe different values that are encouraged here? What has worked and what have you tried.	30	Add to the timeline You could do a yellow sticky exercise and get people to stick them on the timeline.	Reflect some of their language back
	- Thinking about what we have just discussed, what differentiates your community at Murundaka from other cohousing communities, or from other cooperative communities you've been to?	10		
Summary and discussion	So it seems to me that ... (PRACTICE#1, PRACTICE#2, #3 etc.) are all important, how well does that capture what was said here? Is there anything that we should have talked about but didn't or anything you would like to add? E.g. now that you are looking at this list of practices are other practices missing	15	You could get people to add comments using yellow stickers	Give verbal summary

Item		Timing (mins)	Resources	Notes
Summary	Thank you, And what other research activities you will be carrying out at Murundaka	5		Wrapping up
		95 min		

One-on-One Interviews

Questions		Timing (mins)	Research Question addressing, & (Comments)
Why Murundaka	<p>"Can you tell me how you came to live at Murundaka?"</p> <p>[Interviewer prompts]</p> <p><i>Find out why they moved there, how long they have been there etc.</i></p> <p><i>One of the guiding principles of Murundaka (from the website) is Was that a factor in your decision to live here? In what way?</i></p> <p><i>What are some of your motivations for wanting to live sustainably?</i></p> <p>What is the most important contribution that Murundaka makes to your everyday life?</p>	10	
<p>Key Question 1:</p> <p>Follow up from group meeting</p> <p>Practices</p>	<p><i>As I mentioned at the group meeting, in my research I'm particularly interested in how and why people try to live in a more sustainable manner (or reduce their environmental impact) at a community and household level.</i></p> <p>(What kind of things are done at Murundaka that are driven by sustainability or a wish to reduce the environmental impact of the community?)</p> <p>Maybe you could tell me a bit more about the history of Murundaka, how it was formed and has evolved over the year? And how collectively and as individuals you have made it a sustainable community?</p> <p>E.g. think of systems that you have set up, alternative technologies that are used, community rules encourage low-impact behaviour, maybe different values that are encouraged here? What has worked and what have you tried.</p> <p>"In the group meeting, various practices were discussed (show them a list) as things that many people identified as being interesting practices within the community, that contribute in some way to sustainable living at Murundaka, I wanted to discuss these with you"</p>	5	<p>2) What practices are households within Australian intentionally sustainable communities performing in order to reduce environmental impacts or improve the sustainability of the household? How do these practices differ from those of mainstream communities? (RQ2)</p>

Questions	Timing (mins)	Research Question addressing, & (Comments)
<p>"Which of these practices are most important to you and Murundaka, which are less important?"</p>		
<p>Key question 2: <i>I would like to talk about [most important practice]</i></p> <p>Elements of practices</p> <p>Why is PRACTICE#1 is important?</p> <p>Can you tell me a bit more about PRACTICE#1? How have you contributed to PRACTICE#1?</p> <p>From your experience, is PRACTICE#1 common in the wider community?</p> <p>[Interviewer prompts, if not already discussed by interviewee]</p> <p><i>Materials</i></p> <p>- What equipment do you use/need for PRACTICE#1? Where is it? Can you show me?</p> <p><i>Values</i></p> <p>Do you think people that live here have values that make it easier to do PRACTICE#1? Does the community lifestyle encourage these values?</p> <p><i>Rules</i></p> <p>- What do the community guidelines say about PRACTICE#1 at Murundaka? Is doing PRACTICE#1 compulsory?</p> <p><i>Knowledge</i></p> <p>- How did you learn to do PRACTICE#1 in your household? Is there anything special you need to know to do it?</p> <p>- Where does the knowledge come from to do PRACTICE#1 at Murundaka? Is knowledge sharing common here?</p> <p><i>Commitment</i></p> <p>- Was there a time when you didn't do PRACTICE#1? If so, what made you start?</p> <p>- Do you ever feel like you don't want to do PRACTICE#1 anymore? What do you think when you feel like this?</p>	20	<p>What are the elements that contribute to these practices? (RQ2)</p> <p>And</p> <p>3) Why do the practices and elements of Australian intentionally sustainable communities differ from mainstream communities? What is the role of the intentional community in changing the practices of community members through interventions in: elements of practice, relations and interlinking between practices, and</p>

Questions		Timing (mins)	Research Question addressing, & (Comments)
			the recruitment of carriers to more sustainable, or innovative practices (RQ3)
KQ 4, 5, & 6	<p>Repeat questions above for second most important practice</p> <p><i>I would also like to talk about [other most important practice]</i></p> <p>Why is PRACTICE#1 is important?</p> <p>Can you tell me a bit more about PRACTICE#1? How have you contributed to PRACTICE#1?</p> <p>From your experience, is PRACTICE#1 common in the wider community?</p>	15	RQ2 & RQ3
7	<p>Are there other things that you do that are driven by a desire to live sustainably?</p> <p>[Interviewer prompts]</p> <p><i>What about in Murundaka as a community?</i></p> <p><i>What are the things that differentiate your community at Murundaka from other communities in the area?</i></p> <p><i>What about from other sustainable communities you may have visited or heard about?</i></p>	10	(Repeating the questions from the focus group to see if there are any interesting practices that didn't emerge earlier)
8	<p>How does the Murundaka community connect with the broader surrounding community?</p> <p>[Interviewer prompts]</p> <p><i>What is the relationship that Murundaka as a whole has with the surrounding community?</i></p> <p><i>What about in the region?</i></p> <p>- <i>What role do you see Murundaka as having within the wider community</i></p>	5	4) How are intentionally sustainable communities influencing sustainable consumption practices on a wider scale? (RQ4).

Questions	Timing (mins)	Research Question addressing, & (Comments)
<p>- <i>What kind of role do you think a community like Murundaka should be playing in the wider community/ what about in Australian society?</i></p>		
<p>Have you found your habits changing considerably since you moved here? For instance, think about how you felt about living sustainably when you first arrived compared to now</p> <p>Have you seen changes in the habits of others that have moved to Murundaka?</p>		RQ2 & RQ3
<p>9</p> <p>Has the Murundaka community adopted any practices from other similar communities in Australia</p> <p>- Are there other communities around Australia that you think are leading the way in leading sustainable lifestyles?</p>	5	
<p>10</p> <p>Does the Murundaka community engage with other similar community?</p> <p>[Interviewer prompts]</p> <p>- <i>Do you feel there is a much connection between intentional communities/cohousing groups around Australia/globally?</i></p> <p>- <i>Is there any kind of shared vision? Is there much sharing of other kinds – knowledge, experience etc?</i></p> <p>- <i>I was at the Australian Intentional Communities conference at Moora Moora at the end of last year. Do you see Intentional and Cohousing communities as being an identifiable 'group' within Australia?</i></p>	5	RQ4
<p>Wrapping up</p> <p>That's the end of the interview, is there anything that you would like to add?</p> <p>How have you found the interview?</p>	5	
	80 min	

Appendix E. Bundagen Ecological Footprint Survey 2014

Your Name:		Email:	
How many people live in your household?			

Instructions: Thank you for taking the time to complete this survey. **One survey should preferably be filled out per household.** It should take 30 – 45 minutes to complete, but please read through the whole survey first, think about the questions over at least one week and then complete the form. This will help you to give us more accurate information. If you can monitor your consumption over time, please do, but it is not a requirement.

When completing the survey you can choose a different time period for home energy and transportation, so enter data in the form that is the easiest for you. If you have any questions about the survey, I (Matthew Daly) will be available to discuss during my visit to Bundagen ~19th-23rd of March, or can be reached on matthew.daly@student.uts.edu.au or 0415 455 304. Thank you again for participating in my research.

The Ecological Footprint is an indicator that can be used as a benchmark of the environmental impact of residents at Bundagen. It is my hope that this project will help to demonstrate the many benefits of eco-village life, and that this study will help the Bundagen community continue to reduce its environmental impact.

1) Home Energy Use

This section of the survey is concerned with home energy usage. Information about community-wide energy generation systems (PV & gas at community building) will be gathered separately.

a) Renewable Energy	Photovoltaic (Solar)	Wind	Geothermal	Other (E.g. micro-hydro, biogas)
Which sources of renewable energy do you have on your home?				
Please indicate the size of your renewable energy system (preferably in kW or number of panels otherwise)				

a) Renewable Energy	Photovoltaic (Solar)	Wind	Geothermal	Other (E.g. micro-hydro, biogas)
If the information is available, how much energy does your system generate? (In kWh)				
Time period of above generation figure (e.g. per month, per year)				
Please estimate the percentage of your energy that comes from each source				
What battery capacity do you have connected to your renewable energy system?				

Does your home have a solar hot water system? _____

If yes, what size is the system? _____

a) Other Fuels

	Amount	Unit	Time Period (e.g. per month, per year)	Notes/Comments
LPG Gas		45kg Bottles		
*Wood		bags of wood (or) kg of wood		
Petrol		Litres		
**Other				

* If easier give the months of the year when you commonly use firewood, and an estimate of the number of days that a fireplace would be in use per month

**please use a separate line for each type of fuel and identify it by name. Please note: you can add additional pages to the survey if you run out of room when answering questions.

b) Fuel for tools

Is there other equipment that you use that requires fuel e.g. tractors, lawnmowers, chainsaws

(Do not include transport, this will be address in the next section).

Type of equipment e.g. Tractor, lawnmower, chainsaw	Fuel	How frequently is this used? E.g. ½ day per month	Is this generally used for personal use, or community tasks	Notes/Comments

Comments

Please add any other comments about home energy use that you think might be relevant

2)Transportation/Travel

Before you start answering the travel questions, please **tick one of the following**:

- The answers given here refer **only to me**
- The answers given here refer to me and **everyone in the household** I live in

To estimate fuel efficiency I need information on your vehicle:

	Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4
Make				
Model				
Year				

The Transportation/Travel part is split into 3 sections:

- a) Your regular journeys during a typical week;
- b) Non-typical local and domestic travel done in the last 2 months. These are trips that you may only make once a month and therefore would not be included in section A (e.g. visits to family and friends, weekend breaks, trips to the theatre or cinema etc.);
- c) Aeroplane travel in the last year. These are trips that you may only make a few times a year (e.g. holidays etc.)

a) Regular journeys made during a typical week (e.g. Monday – Sunday)

Please indicate the distance travelled for your regular weekly travel in the following table. These are journeys that you make on a weekly basis, such as commuting to work/school and shopping. If you are unsure of your travel distance, Google Maps or Whereis.com.au can tell you the distance of a journey

To assist, please also insert the average number of people travelling in the car. E.g. if half the time you travel alone and half the time with someone else, the occupancy will be 1.5. If you are unsure please just give an estimate.

Mode of Transport	Average number of people in car	Commuting Travel Total Distance travelled to and from work in an average week	Personal Travel Total distance travelled for leisure activities and other non- work activities in an average week (including shopping, visiting friends and family etc.)
Car (as the driver)			
Car (as a passenger)			
Train			
Local Bus			
Coach			
Bicycle			
Walking			
Motorcycle			
Taxi			
Air Travel -Domestic			
Air Travel – International (Note: enter details of holiday flights in Section C)			

b) Domestic Non-Typical travel made in the last 2 months

In this section please identify **local and domestic non-typical trips** that you are making in this month and any you made in the previous month (2 months altogether). This includes travel that is NOT part of your typical daily travel habits but EXCLUDES International travel.

For example, holidays/weekend breaks to visit friends and family in Australia that you would not make every week.

Mode of Transport	Number of people in car <i>e.g. 4 people</i>	Personal Travel Total Distance travelled in Australia <i>e.g. Weekend away in Byron – 500km</i>
Car (as the driver)		
Car (as a passenger)		
Train		
Local Bus		
Coach		
Taxi		
Motorcycle		
*Air Travel -Domestic		

*If you do not know the distance for your Domestic Flights, write the origin, destination and any stopovers for your journey.

c) **Aeroplane travel in the past 12 months**

Please list **aeroplane travel journeys** you have made in the **past 12 months** (that have not already been listed in part a) or b)). Please specify whether the journey is most readily classified as being for a personal or work-related purpose.

Air Travel		Purpose of Journey (Circle appropriate)
Please provide the origin, destination and stopovers, OR number of kilometres you travelled for each flight:	<i>Example: Coffs Harbour – Sydney (stopover) – Singapore (stopover) - London</i>	<input checked="" type="radio"/> Personal <input type="radio"/> Work
	Flight 1:	<input type="radio"/> Personal <input type="radio"/> Work
	Flight 2:	<input type="radio"/> Personal <input type="radio"/> Work
	Flight 3:	<input type="radio"/> Personal <input type="radio"/> Work
	Flight 4:	<input type="radio"/> Personal <input type="radio"/> Work
	Flight 5:	<input type="radio"/> Personal <input type="radio"/> Work
	Flight 6:	<input type="radio"/> Personal <input type="radio"/> Work
	Flight 7:	<input type="radio"/> Personal <input type="radio"/> Work

Comments

Please add any other comments about travel habits that you think might be relevant

3) Food Consumption

Please fill out the table on the next page based on a **typical week**. For each meal you will be asked to enter the **source** and **type**. The options for source and type are included below.

In general, please choose the description that best matches the majority of the meal. However, if a meal is balanced between two or more sources, feel free to put both in with a slash between them (e.g. garden/local/....).

Before you start answering the food questions, please tick one of the following:

- The answers given here refer to me and everyone in the household I live in
- The answers given here refer only to me

<i>For Source please enter:</i>	
Garden:	If most of the food came from your personal garden, a community garden, or animals you raised
Local:	If most of the food came from a farm attached to your community or within about 160 km of your home
Store:	If most of your food came from a grocery store or other large store (e.g. supermarket)
Restaurant:	If your meal came from any type of restaurant/café/fast food outlet, unless it specifically uses local foods, then put local
<i>For Type please enter:</i>	
Vegan:	No animal products (meat, cheese, milk, etc.)
Vegetarian:	No meat, fish, poultry, etc.
Fish:	Fish included as a portion of meal
White Meat:	White meat (pork, poultry etc.) included as a portion of meal
Red Meat:	Red meat (beef, lamb etc.) included as a portion of meal

a) Typical weekly food consumption

	<i>Example</i>	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Breakfast (Source)	<i>Local/ Store</i>							
Type	<i>Vegetarian</i>							
Lunch (Source)	<i>Restaurant</i>							
Type	<i>Vegetarian</i>							
Dinner (Source)	<i>Garden/ Local</i>							
Type	<i>Red Meat</i>							

b) Organic Food

In general what percentage of the **fruits & vegetables** you eat are **organic** (produced without pesticides or herbicides)? _____

In general what percentage of the **dairy** you eat is **organic** (produced without pesticides or herbicides)? _____

In general what percentage of the **white meat** (poultry/pork etc.) you eat is **free range, hormone and steroid free**? _____

In general what percentage of the **red meat** you eat is **grass-fed, hormone and steroid free**? _____

Comments

Please add any other comments about food consumption that you think might be relevant

4) Goods and consumables

1. How much does your household spend on **clothing, footwear and/or sporting** goods in a **typical month?**

- Less than \$50 (maybe some t-shirts and socks)
- Approximately \$150 (maybe new pants and shirt)
- Approximately \$325 (maybe new pants, shoes and shirts)
- More than \$400

2. How much does your household spend on **furnishings** in a **typical year?**

- \$200 or less (maybe some bedding)
- \$500 (maybe a new lamp or table)
- \$2,500 (maybe a new couch or bedroom set)
- \$4,000 or more

3. How much does your household spend on **appliances** (e.g. fridge, stove, microwave, blender) in a **typical year?**

- \$50 or less (we don't typically buy appliances)
- \$200 (we only replace broken appliances)
- \$400 (we sometimes replace out-of-date appliances with newer models)
- \$1,000 or more

4. How much does your household spend on **home entertainment equipment, computer equipment and other electronic gadgets** (e.g. phones, cameras, mp3 players) in a **typical year?**

- \$200 or less (we rarely make such purchases)
- \$400 (maybe replacement of broken TV or computer equipment)
- \$900 (replace out-of-date models and occasionally buy new gadgets)
- \$2,000 or more

Comments

Please add any other comments about good and consumables that you think might be relevant

5)Waste Disposal

a) General Rubbish

Please do your best to estimate the amount and type of waste for each question.

	Quantity	Time Period (e.g. per week/ month/ year)	Estimate of size or weight (if you answered in bags, bins or other non-standard units)
How much general rubbish do you dispose of? (answer in kgs, bags, bins, litres, etc.)			

What do you typically dispose of in your **general rubbish** week each week? (e.g. paper, food waste, yard trimmings, wood, leather and textiles, plastics, metals, glass, etc.).

List Materials:							
-----------------	--	--	--	--	--	--	--

b) Recycling

What types of materials do you recycle? (plastics, aluminium, steel, and cardboard are common answers) and how much?

List Materials:					
Can you estimate the amount you would recycle in a typical week?					

How do you dispose of **food waste** (e.g. compost/worm farm, garbage disposal in sink, council garbage disposal)? _____

Comments

Please add any other comments about waste disposal that you think might be relevant

7)Water Usage

Which of the following water saving devices do you have installed in your home?

Rainwater Tank: _____

- Size _____

Greywater recycling system _____

Blackwater recycling system _____

Composting Toilet (or similar) _____

If measurements are available, approximately how much water does your household consume each month/year?
(Cross out which does not apply) _____

Comments

Please add any other comments about water usage that you think might be relevant

Thank you for completing this survey. Please take your completed survey forms to the Co-op shop on Tuesday, to Jamie, or return to Matthew Daly during his visit to Bundagen (19th-23rd March)

If you have any questions about the survey, please contact Matthew Daly on 0415 455 304 or matthew.daly@student.uts.edu.au

Research ethics

This study has been approved by the University of Technology, Sydney, Human Research Ethics Committee (UTS HREC REF NO. 2013000631). If you have any complaints or reservations about any aspect of your participation in this research you may contact Dr Chris Riedy (Matthew's Principal Supervisor, 02 9514 4964 or the UTS Ethics Committee through the Research Ethics Officer, [tel: 02 9514 9772]. Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

Appendix F. Ecological Footprint Survey Results

Below are the responses to the EF survey distributed to Bundagen residents. Data has been de-identified.

Code	Energy						Travel			Food						Goods section				Waste				Organics			
	Elect-ricity	PV size	Battery capacity	Wood	Fuel Oil	Propane	Car L/1000 m	Car Travel	Air Travel	% Vegan	% Vegetarian	% Meat	% Garden	% Local	% Other source	Clothing, Footwear and/or sporting goods	Furnishings	Appliances	Electronics etc.	General Rubbish disposal per year	Glass recycling per year	Paper recycling per year	Steel recycling per year	Fruit & Veg	Dairy	White Meat	Red Meat
	kWh	W	A-h	kg	L	L		VKT	VKT											kg	kg	kg	kg				
1	0	1000	900	60	157.2	117.6	6	10400	1748	0	100%	0	0%	0%	100%	\$50.00	\$200.00	\$200.00	\$400.00	48	52	104	26	20%	0%	0%	0%
2	0	450	190	0	820.8	52.92	8	5286	0	67%	29%	5%	0%	43%	57%	\$50.00	\$200.00	\$200.00	\$200.00	48	13	26	10	40%	80%	0%	0%
3	0	750	1100	2000	90	176.4	9.5	5600	30588	0%	86%	14%	33%	0%	67%	\$50.00	\$200.00	\$200.00	\$900.00	120	26	52	0	80%	60%	80%	50%
4	0	1275	1000	200	259.5	176.4	9.7	7800	95434	0%	100%	0%	33%	33%	33%	\$50.00	\$200.00	\$50.00	\$400.00	120	52	156	26	50%	50%	N/A	N/A
5	0	780	1200	?	102.6	396.9	7.2	22000	25796	0%	67%	33%	14%	43%	43%	\$50.00	\$2,500.00	\$200.00	\$400.00	120	52	26	26	35%	20%	40%	0%
6	0	675	0	800	171	705.6	11	6760	2246	0%	43%	57%	19%	43%	38%	\$325.00	\$500.00	\$400.00	\$900.00	240	52	208	26	60%	100%	100%	100%
7	0	690	600	0	212	529.2	10.5	16160	0	0%	71%	29%	14%	43%	43%	\$50.00	\$200.00	\$50.00	\$200.00	180	52	130	65	10%	15%	90%	15%
8	0	320	100	2000	114	282.24	9.5	7800	96000	0%	48%	52%	14%	43%	43%	\$50.00	\$200.00	\$200.00	\$200.00	31	52	52	0	90%	90%	100%	95%
9	0	320	300	0	91.2	352.8	6.8	16960	24000	0%	52%	48%	0%	38%	62%	\$50.00	\$200.00	\$50.00	\$400.00	96	78	52	39	30%	20%	40%	N/A
10	0	390	250	600	1094.4	423.36	8	12300	3496	0%	29%	71%	33%	33%	33%	\$50.00	\$200.00	\$50.00	\$200.00	480	26	0	39	70%	50%	20%	N/A
11	0	390	2560	200	0	70.56	6.8	14560	0	0%	57%	43%	52%	33%	48%	\$50.00	\$200.00	\$50.00	\$200.00	240	104	104	104	80%	60%	40%	70%
12	0	840	1000	4.5	0	352.8	6.4	4450	22308	0%	86%	14%	24%	38%	38%	\$50.00	\$200.00	\$200.00	\$200.00	0	52	104	0	40%	0%	75%	N/A
13	0	1120	1350	1	0	88.2	9.5	15198	26274	0%	67%	33%	33%	19%	48%	\$50.00	\$200.00	\$50.00	\$200.00	144	52	26	0	70%	100%	100%	100%
14	0	600	1000	1	0	88.2	6.7	15640	1326	0%	52%	48%	14%	33%	52%	\$50.00	\$500.00	\$200.00	\$900.00	37	52	52	13	20%	20%	10%	20%
Average	686	825		451	222	272	8	11494	23515	5%	63%	32%	20%	32%	50%	\$69.64	\$407.14	\$150.00	407.14	136	51	78	27	50%	48%	53%	45%
Median	682.5	950		60	108	229	8	11350	12902	0	62%	33%	17%	36%	45%	\$50.00	\$200.00	\$200.00	300.00	120	52	52	26	45%	50%	40%	35%

Appendix G. Additional information about Bundagen

Cooperative Community

This appendix contains additional details regarding the formation of Bundagen, the way people join and leave the community, and the consensus decision-making process used for community meetings.

Formation of Bundagen

The group that became Bundagen initially formed to stop a sand-mining development on the Bundagen headland, an area of bushland of ecological significance and beauty. That evolved into the idea of creating an alternative that would offer a means of conserving the land in the long term, as well as addressing other perceived social, economic and environmental issues present in society at the time. The practice of creating a community, and all the key elements, will be explored in the following sections. Before that occurs, the next section will explore the history of the community.

This section is based largely on the interview with Chris (36 years⁷⁸), one of the earliest members of the community. He knew of the land that became the Bundagen community whilst it was still farmland, and was witness to or at least peripherally involved in most of the stages of community formation. However, it does not claim to be the definitive account of the history of Bundagen.

For Chris, it started in the mid- 70's with a '*fantasy about living on a headland and surfing when surf's good and painting when it's not*'. This idea was captured in the influential mid-70's surf film *Morning of the Earth*, and was a popular fantasy amongst the surfing subculture at the time. Chris had noticed the Bundagaree Headland on a map, and thought it looked like an interesting location. In 1978 he came and had his first look:

I met the farmer at the gate and I asked him if there was land for sale here and he said 'yeah mate you can have it for 200 grand' [\$200,000] and of course I didn't have that so I kept on my way (Chris, 36 years).

By 1980 Chris was living in an intentional community in the Bellingen region called Shambala. He had met up with a few people who were interested in buying the Bundagen land – '*this amazing farm out on the beach*' -, including a guy who was living in the old farmhouse on the property. At this stage, an adjoining farm had become part of the Bundagen property, and the price was roughly \$450,000, and the plan was to buy the property with about 30 members.

⁷⁸ Indicates the number of years this person has been part of the community

He next found himself living in Dharmananda⁷⁹, another community in the Northern Rivers region of NSW, with other activists he met through his involvement in an environmental protest movement. At this stage, a development company had a plan to buy the Bundagen land and turn it into a golf course and tourist development.

By mid-1981, a group called Storyboard had formed to purchase the Bundagen land. A formative event for that group was an anti-sand mining protest camp at Middle Head Beach near Nambucca. A small group of conservationists and the local Aboriginal community joined together to oppose the sand-mining of Middle Head Beach in 1980, with actions including establishing a Land Rights embassy (Board of Studies NSW 1998). Many of the members of Storyboard were already living in alternative lifestyle communities in the nearby Bellinger Valley, and spent significant time at the protest camp throughout 1980. This was described as 'a period of great altruism and commitment and hope for a more responsible world' in which 'strong networks were formed' amongst the hundreds of people that came together through the protest camp (Chris 2017, pers. comms. 3 July).

Storyboard had established a network of people interested in a potential land purchase, which included people such as Chris who were living in already existing intentional communities. The group were determined to protect the bushland from development and managed to secure the first option to buy the land. Regular meetings were held by the group (both in Bellingen and on the Bundagen farmland) leading up to a publicised 'seminar' held on the long weekend of June 1981 inviting people to become members of what would become the Bundagen Cooperative Community. Many of the attendees were from the Middle Head protests, along with others coming from across the eastern states of Australia. Over the weekend, the Storyboard group had organised presentations from people with expertise in various areas related to forming a community and arranged a team to interview people seeking to join the community. The criteria to join the new community was 'Honesty, Openness and Courage'. Three principles were also suggested to guide the new community on the advertising fliers and during those first meetings: Environmental Responsibility, Social Harmony, and Economic Independence (Chris 2017, pers. comms. 3 July). This was described as 'an intense period... wildly exciting and totally chaotic when it came to meeting times. People all trying to speak at once. It was also a time for meeting new friends and reconnecting with old... fireside chatter around the camps on the headland continued late into the night' (ibid).

Chris bought his share in Bundagen at the first opportunity. He thought it was an ideal piece of land for a community, noting it was very close to a good beach and it had been selectively cleared by the farmer who settled the land so that plenty of original native vegetation remained. By the end of the

⁷⁹ Many of the intentional communities that formed following the 1973 Aquarius Festival had names reflecting the influence of Eastern philosophies amongst the counterculture movement.

long weekend, a large part of the money needed was secured. Three more weekend-long gatherings on the land were held over the next two months, during which time enough funds were obtained to purchase the land and have enough left for ongoing expenses (e.g. legal costs). The land was bought in the spirit of the principle of 'economic independence', which meant that no money was borrowed externally to make the purchase. In order to do this, the total membership was doubled from an initial plan of 90 shares at \$6,000 to 180 shares at \$3,000 (Chris 2017, pers. comms. 3 July).

Following the purchase of the land in 1981, the community decided to initially place a moratorium on doing any permanent building on the land. Chris initially camped on the property on and off for the first year, then lived in a borrowed tent for his first year of actually living on the land (in 1983) before building the 'little shack' which he still lives in now.

The creation of a community is a very complex process, involving countless conscious and less-conscious negotiations between all those involved. When the group originally bought the land, he said there was '*a huge feeling that we should do everything according to a plan*'. However, from the moment Chris moved onto the property, his expectations were challenged:

I was a bit disappointed that there was a big movement for people just grabbing spots [for their house] you know and setting up their own... rather than doing stuff communally and working towards a plan (Chris, 36 years).

There was a tension inherent in the community from its foundation. There were a lot of professional people (planners, architects, town planners) involved in the early days of the Bundagen community, who Chris described as the more vocal members. However, quite a lot of the professional people did not end up actually living on the community, the '*people who came to live here were sort of unemployed and looking for cheap options*' (Chris, 36 years), they were the people without ties elsewhere who were ready to move in. Interestingly, very few of the Storyboard members actually bought shares in the new community or went to live there for any length of time. As Chris described, after many months of 'working together and achieving such remarkable success, they went back to their former responsibilities' (2017, pers. comms. 3 July).

So within the practice of creating a community, there are obviously many different meanings and competences that are combining to shape the manner in which the 'community-creation' practice is performed. There are also different stages of the community creation process, or parts of the performance. The implication of Chris's comments was that most of the original group that purchased Bundagen shared values around environmental activism and conservation. Also, those involved in the original planning (the professionals and the planners) shared certain ideals about doing things communally and working towards a plan. However, these meanings may not have been shared, or held as strongly, by many of those who actually performed the later stage of the

community creation performance by moving on to the land. It is interesting to consider the things that were inscribed by the original planning (as lasting legacies) even if the later residents did not share the meaning and motivation that originally inspired the planning. These infrastructures (both physical, legal and social) that were created during the early days of the community continue to play a major role in sustaining and shaping many practices within the community.

Comings and goings - community growth and contraction

The membership process for joining Bundagen is organised firstly through the villages. When a village has a vacancy, either a parcel of land that could be built on or a vacant house, the village decides whom they would like to offer that place to as a prospective member. As the membership of Bundagen is nominally full, and new places are rare, a number of people and families spend time as short and long-term visitors waiting for places to arise in villages. Once a place becomes available, a prospective member is invited to go through an orientation process with the village, spending time participating in village and community life. Once the village is satisfied, they then propose the prospective member to the wider Bundagen community, as someone they are planning to offer a site to live. There then follows a community orientation process, before finally the community votes on whether to offer the prospective member full membership of the Bundagen Community.

The time for orientation in the village depends on each village, with 3 to 6 months being an average time for village orientation and a further six months with the whole community. As an invitation is needed from the village, prospective members need to be known by the village prior to commencing orientation, so that would usually mean someone has lived with the village for six months to a year as a visitor (either house-sitting or a temporary living arrangement such as a caravan). However, the emphasis is on ensuring that both the prospective member and the community fully understand what or who they are committing to and are comfortable with the match, so orientation can often last much longer. In reality, *'usually it's 3, 4, 5 years before they become a member'* (Rejane, 26 years). Whilst during the orientation the onus is on the prospective member to participate as fully as possible in community life to show that they would be a worthy addition to the village and the community, there is a recognition that life as a member of Bundagen is not for everyone. It is important for prospective members to understand the practicalities of living in a cooperative community as well as to be in agreement with the idealistic vision.

The Bundagen Community census of 2012 listed a number of categories of people associated with the community: i) members living on the land, ii) saving for shares (for children) iii) long-term partners of parents of members to pay membership over 3 years), iv) partners (of members), v) NOK (Next of Kin of members) over 18, vi) children under 18, vii) Visitors – long term, viii) visitors – short term, ix) members not living on land. Membership allows people to vote on community decisions

and a right to access the land. Visitors (short-term and long-term) can't vote, so don't have a say in decision-making. And visitors can be more easily kicked out of the community than full members.

There are a few elements that allow the vetting practices to occur in the way they do at Bundagen. The community rules allow houses that are empty for a reasonable period of time (for example if the current owner is overseas for a few months) to be house-sat by a short-term or long-term visitor. There is also ample space on the land for visitors to camp or live in caravans during their vetting.

The residents of Bundagen spoken to for this research gave many motivations for joining the community, which were generally a mix of environmental, social and economic factors. Interviews were held with anyone who made themselves available. No attempt was made to select research participants to obtain a representative diversity of views from the community. It is likely that there was a bias amongst those interviewed towards community members with positive views of community living, and those with strong environmental values. Nevertheless, there were a diversity of views expressed, and interviewees generally had a good understanding of the opinions and motivations of others in the community.

Some of the early members talked about being driven to move from the city by both environmental and social factors. They wanted something different to the increasing alienation and exposure to pollution they had found from life in the city, and wanted to get away from the excessive consumption associated with the affluent lifestyles of their peer groups in the city. However, not all original members had the same motivation, with others motivated by economic factors, i.e. access to cheap land and housing, rather than a commitment to environmental conservation and community living.

Members of Bundagen are free to leave at their discretion, although the ownership structure of the community (with all land owned by the cooperative) means that the process of selling out is quite unique, with both positive and negative impacts on the community. All members own a share of the land at Bundagen, but this is captured in the value of their share in the cooperative, which the community has intentionally stopped from increasing in value at the same rate as the value of the proportionate share of the land that the community inhabits. When a member wants to leave, their house can only be sold for the value of the materials and labour that constitute the structure. The actual structure and the land always remains the property of the cooperative.

You can sell the materials to somebody else if you wanted to leave, but it's not a free-market economy in that sense. You know, and it was very much set up so that it didn't have a speculative angle to it (Allan, 34 years).

There is a complex process set up to ensure that the pricing of the materials and labour that constitute a house are consistent and provide fair value. However, as the price of land is not included

in the price, the community was facing issues where some people who wanted to leave could not leave as they couldn't make enough money from the sale of their house within Bundagen to buy an equivalent property on the free market in a nearby area. As Rejane describes, this system has:

been set up to encourage people who actually want to live here and be part of the community rather than people coming here to speculate... So this is great, it's a great idealism. But now, 30 years down the track, we find that if people are disillusioned [not satisfied] with Bundagen, and they want to move out... they can't... So people are stuck here. Because of that we have a small number of people they don't really want to be here, they've got no choice [they can't afford to move elsewhere] ... they are not the best members. They are disgruntled (Rejane, 26 years).

This innovative system is effective in keeping housing affordable in the community but has had negative ramifications for the social dynamics of the community.

At the time this research was conducted, the Bundagen Community website stated in capital letters "MEMBERSHIP IN BUNDAGEN IS CLOSED". However, during informal discussions, it appeared that there were potential sites still available, either if the right potential member appeared, or to potentially be made available in the future.

Consensus decision-making process

The modified consensus decision-making model that Bundagen uses is summarised in Figure G-1. Meetings are held regularly to decide on matters affecting the community. Basically, in any meeting the community will attempt to reach consensus on an issue. If that is not possible after further discussion a 90% majority, if that is not possible then a decision can be moved to a later meeting or as a final option proposals can be passed with a two-thirds majority, but anything less results in the failure of a proposal.

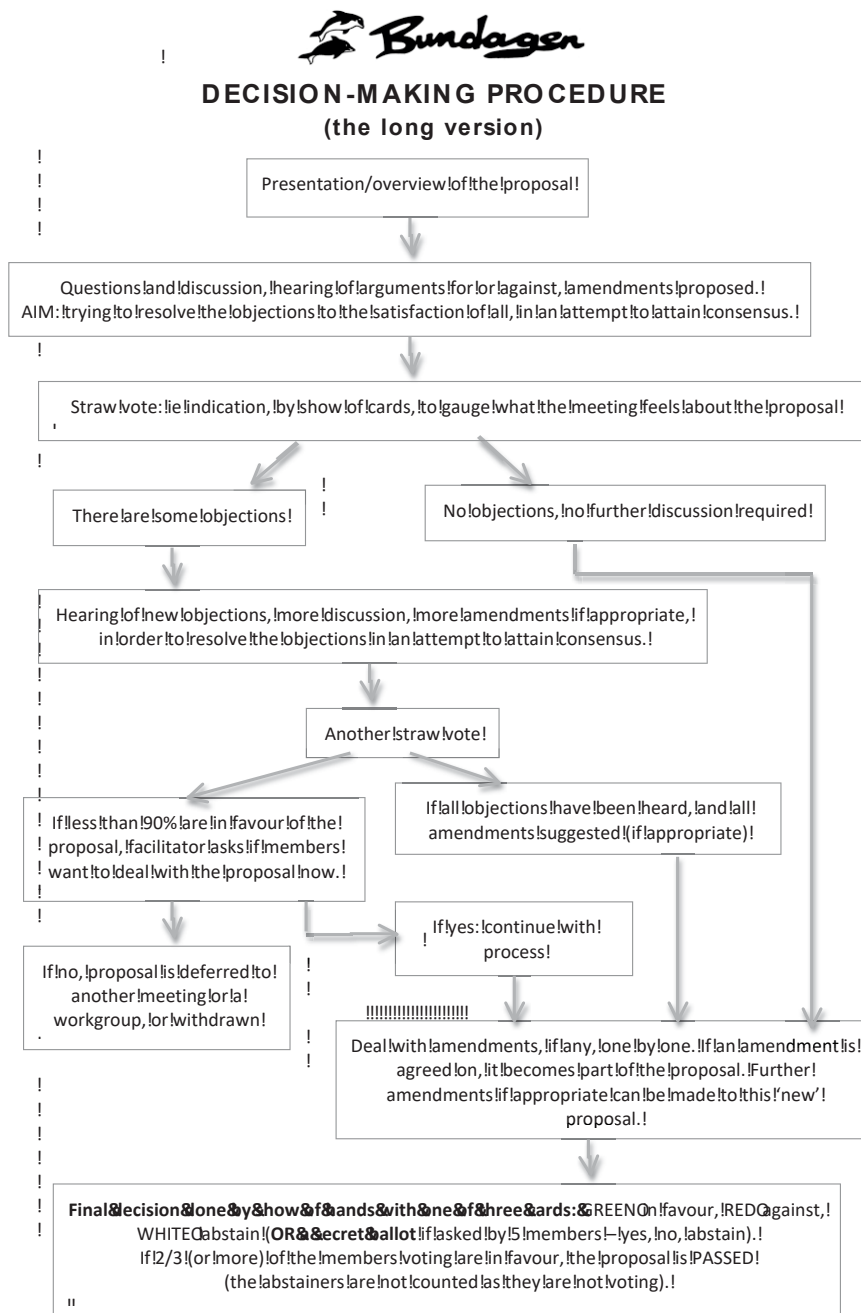


Figure G-1: The Bundagen Decision-making process (Rejane 2017, pers. comms., 17 June)

Importantly, the community will continually try to reach whichever version of consensus they are working towards through listening to members concerns and discussing solutions.

Whilst some residents aren't sure if they have found the best model, it is one that does function:

From a community point of view, I'm not so sure. You know that our particular decision-making processes and so-on are a particularly good model, but it is a model. You know for how to run a community in a particular way (Jane, 12 years).

Appendix H. Additional information about Murundaka Cohousing Community

This appendix contains additional details regarding the creation of the community, specifically about the formation of Murundaka, the way people join and leave the community. It also contains further details regarding community governance, the Murundaka vision, and the mindful communication cards used in meetings.

Creating home and community

Formation of Murundaka

After identifying an opportunity, Earth Co-op⁸⁰ presented a proposal to CEHL including a preliminary development yield and mix, based on cohousing principles (shared facilities, socially supportive design) including a number of environmental initiatives. The innovative nature of the proposal led to some resistance. Initially, CEHL wanted to use the land to create a more traditional community housing development, one that didn't adopt the cohousing and environmental principles important to the founders. Giselle describes how they pushed their vision:

we talked with the architect, and we fought with the architect, and fought with Common Equity Housing to try and hammer through that we needed the sustainability features and factors in here (Giselle, 6 years).

The Earth Co-op is able to draw upon the SLF network of professionals, including architects and planners, to convince CEHL to go ahead with the project. They were instrumental in arguing that the project was feasible and provided a number of benefits.

In eventually convincing CEHL to go ahead with the project, it was crucial that Earth Co-op was able to draw on the SLF network of professionals who had bought into the cohousing model, including architects and planners, to help argue the benefits and feasibility of the project:

[when the architect] did his first presentation we had a room full of expertise from State Government, Vic Urban, sustainable built environment architects, we had the senior strategy planner from our local council... We had so many people there and it was a bit daunting for the architects... But it was necessary as well because we wouldn't have got this otherwise (Giselle, 6 years).

Once CEHL had decided to proceed with the project, it took the lead role as developer: it purchased the additional two properties with its own capital, engaged their own architect for design and

⁸⁰ Iain and Giselle were the long-term Earth Co-op members spoken to for this research, and for a long time were the driving force from within Earth Co-op. As the project developed other members became more involved and played pivotal roles in creating the final model for the project.

documentation services and oversaw the designs (Murray et al. 2013). Initially, the planning approval application for the cohousing development was lodged with the local government, Banyule City Council. However, at this time the Federal Government introduced the Nation Building – Economic Stimulus Plan in response to the Global Financial Crisis of 2008. Part of this plan was the Social Housing Initiative, which provided over five billion dollars for affordable housing projects, as well as an expedited approvals pathway. CEHL was able to secure Commonwealth funding for the Murundaka Cohousing proposal, and bypass the local council approvals process, instead being approved by the Victorian Minister of Planning after assessment by a state government inter-department working group (Murray et al. 2013).

Final approval was granted in 2009, with construction starting in 2010. This effectively marked the end of the first stage of the creation of Murundaka.

Comings and goings - community growth and contraction

At about the time Earth Co-op was approaching CEHL about a cohousing development, the Sustainable Living Foundation was starting to focus on communities. This became a new network that could be drawn on to support the formation of the cohousing group; and it's how Heidi, one of the foundational members of Murundaka, became involved:

seven or eight years ago, one of the platform groups in that [Sustainable Living Foundation], that I was quite involved in, kind of morphed from being a green building focused group to being a communities focused group. That's when I became aware of intentional communities and cohousing and that kind of stuff (Heidi, 6 years).

The cohousing project was promoted through many networks, particularly the SLF, to find prospective tenants. The project generated plenty of interest, with hundreds of people showing up for the public information sessions. Earth Co-op and CEHL managed an exhaustive information, training and selection process, interviewing everybody who put in an expression of interest.

A number of people have left the community since it was completed. Some departures were related to conflicts within the community, others due to changing life circumstances. The fact that all places within the community are rentals makes the process of coming and going much easier than in intentional communities where people are owners or shareholders.

However, the main motivation for most people to actually move in (and commit, rather than just appreciating the idea) was almost always something more concrete, with the prospect of being able to live in a more sustainable manner an additional attraction. Reasons that people mentioned for choosing to move into Murundaka included:

- Long-term security: 'The security of tenure, being able to stay in a place as long as I could, as long as I wanted, without being chucked out regularly and just that feeling, it's just really horrible' (Delphine, 6 years).
- Affordable rent (rent is 25% of your income, and capped at 75% of local market rates): 'plus affordable rent. Which was as we know is a big thing. And for some people the main thing.' (Giselle, 6 years)⁸¹.
- Access to a community of people, and social networks: 'after 16 years in country Victoria I was really craving for a sense of community so that was probably the second thing' (Delphine, 6 years).

Heidi was one of the residents who had been strongly committed to consuming sustainably for a long time (this had previously included a 'buy nothing new year'). Through her involvement with the SLF working groups she found herself learning more about intentional communities and decided that being part of a strong community was essential to a sustainable lifestyle:

So I, pretty much through that platform [SLF communities group], learnt a lot about how being a part of a community, about how sharing and reciprocity are not just these wishy-washy kind of nice to have in your life, they are really the backbone of living what a sustainable life can be (Heidi, 6 years).

A defining feature of the community is its location in Melbourne's suburbs, in close proximity to a wide range of amenities and facilities.

we've got access to the park, it's not that far from the [train] station, buses, universities, hospitals. The biggest hospital in the southern hemisphere is within a couple of kilometres, you know we've got lots of universities, local schools - public and private - all close by. This was you know a working-class suburb but because of the proximity [to the city] ...it's changing (Iain, 6 years).

The location of Murundaka within an existing urban context reflects the community's aim of living in a more sustainable manner without disconnecting from mainstream society. In fact, the urban location can be seen as supporting an extended notion of communal space ideal/practice, i.e. access to common/public property of parks, public transport, schools. This means that the community is directly connected to existing infrastructures and systems that shape practices within the community.

⁸¹ 'The affordability comes from the sweat equity component whereby we self-govern managing our finances, rent collection, maintenance and legal responsibilities (and in our cohousing co-located case - a whole lot more as well)' (Giselle 2017, pers. comms., 24 June)

Governing Home and community – background information

As a Common Equity Rental Cooperative, the Murundaka Cohousing Community is self-governing and managed by the members for the members. The governance structure is complicated as the cohousing community was in essence formed as new households within the existing Earth Co-op⁸². Outside of the cooperative structure there also exists a separately incorporated association for the Murundaka Cohousing Community⁸³. Different rules and procedures are used for governing the cooperative or the cohousing community. In addition, Earth Co-op is a part of the wider CEHL program, which carries additional administrative requirements.

The creation of Murundaka Cohousing Community dramatically increased the size of Earth Co-op, from 10 to 28 households, and brought in new people to an innovative housing arrangement that was both more collaborative and communal. Whilst there remained a number of people with experience governing a rental housing co-operative, few had practical competences relevant for living in an intentional community. The governance structure at Murundaka was a subject of ongoing discussion and experimentation, with the community still working to adjust to the:

difference between being a rental housing co-operative and being a cohousing community. And trying to do two things at once with a bunch of people that by and large hadn't done any... where a very small amount of the community that had experience in one or the other, and a couple of people that have experience in both. But not in living in the middle of one at the same time as being in a co-op (Heidi, 6 years).

Prior to the creation of Murundaka Cohousing Community, Earth Co-op was already self-governing and operated under an all directors model. Each of the 10 households had a member, and each member was a director. The directors attended all meetings and made joint decisions. As landlords, they were responsible for each other's properties. As Giselle described it, this system mostly functioned smoothly for the most part, although '*admittedly it was a core group doing the lion's share of the work*' (Giselle, 6 years).

The system where all members were also directors was changed in the first year of moving into Murundaka 'because we didn't think that 28 directors was going to work. It just sounded too cumbersome' (Giselle, 6 years). Instead, seven directors were elected as representatives. However, the model had its problems, and the community witnessed 'a bit of student politics modalities', with 'jostling for power' and the directors becoming 'targets for the criticisms and the undermining... that was going on' (Giselle, 6 years). At the time of the interviews, the community was considering returning to the previous all directors model so that

⁸² Earth Co-op is registered as a non-trading cooperative with shares under the Cooperatives Act 1996 (Vict.)

⁸³ Murundaka Cohousing Community Inc. is registered as an incorporated association under the Associations Incorporation Act (1981)

everyone in the community shared equal decision-making responsibility⁸⁴. This change was made less cumbersome as most of the separate houses that were part of the original Earth co-op were in the process of splitting from Murundaka in 2014 to create a separate Sun Housing Cooperative. The split was portrayed as amicable and based on the diverging priorities of the two groups. Two of the separate houses would remain as members of Earth Co-op, as they were located in the Heidelberg region and could easily participate in and use the common facilities within Murundaka. This meant that Earth Co-op would comprise 20 households.

Visioning

The Murundaka vision reads as follows:

We are a cooperative community, relating to each other with respect, compassion and support.

- *We live sustainably*
- *We live with integrity*
- *We are self-reflective and outward looking*
- *We are part of our broader communities*
- *We have fun*

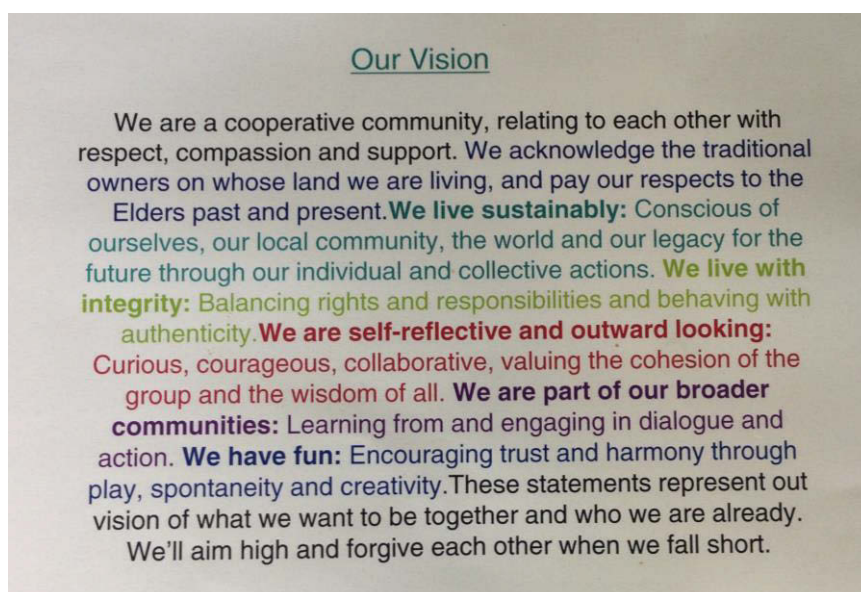


Figure H-1: Murundaka vision statement as displayed on the wall of the common house

The vision statement was displayed on the wall of the common house where it was visible to all residents and visitors to the community (as shown in Figure H-1)). The community made a conscious effort to ensure that its vision statement for the community was kept in the minds of the residents, and was seen as a living document to be regularly discussed.

⁸⁴ At the time of publishing they had successfully operated with between 22 and 26 directors for a number of years (Heidi 2017, pers. comms., 20 June).

We don't do newsletters all that often but for a while, and hopefully it will continue we would take a sentence out of the vision statement and put it into the front of the newsletter and sort of say, what does this mean in actuality? These are the words we said, but how do we activate these words and make them come alive? (Giselle, 6 years).

For example, the newsletter from 15th May 2013 asked readers to reflect on the third line of the Murundaka Vision statement – We live sustainably: Conscious of ourselves, our local community, the world and our legacy for the future through our individual and collective actions. It asked readers to think about what the Murundaka Community means by this statement, and is followed with thought-provoking questions including:

- How can these words be brought to life?
 - How can we demonstrate what this means to us through our actions?
 - How can we make this come alive?
 - How can we move from persuasive written words to sincere and meaningful action in our lives?
 - What is the opportunity provided by Murundaka for walking this talk?
 - What opportunities do we also have as individuals with our particular skills and interests?
- (Murundaka May Newsletter, Eds. Giselle and Heidi, 15 May 2013)

Having these prompts for reflection in the newsletter, and keeping the vision statement visibly displayed, were ways of maintaining the shared meanings of the community that were conceived by the residents. As they were going about their daily lives, they were reminded of meanings such as being conscious of their legacy for the future in their practice performances. For Giselle, reflection was actually specifically called for in the vision statement:

When we say conscious of ourselves, that to me is that we go into the minutiae of our lives and examine everything, and question and, you know assess and reassess (and reflect) yeah. And we talk about it with one another and... You know so how far can we go? (Giselle, 6 years).

Along with the original vision, and the newsletters, the community has held regular retreats, and some mini-visioning events to continue to reflect on how the communal life is going, and evolve the vision. They hold annual retreats for all members as a community building exercise. These retreats include some organised sessions, although the emphasis is for the members to just 'be together and talk' (Giselle, 6 years). As Giselle described:

we had a retreat at common ground before we moved in, like just maybe a few weeks before we moved in we went up there for weekends. And that was our first, and now we have three retreats. Is that right, yeah I think we had three annual retreats now.

And for our community that is actually in our participation policy as well. You know it is sort of obligatory. You want 100% of people there. You know if possible. And I know, the feedback I've had from other people in communities is that it's amazing that you have got that established so early, that is going to hold you in good stead yeah. So I feel like we're well set up (Giselle, 6 years).

Murundaka has also run other charrette style planning sessions, also using visioning processes, at other stages throughout the history of the community, with positive results. These are used as ways to discuss ideas for ongoing improvements with the whole community, to coordinate the ideas of all residents into a vision that reflects the whole of the community and can be acted upon.

Wow, when we sit down and really go through some processes designed to unlock our creativity and our collaborative, collective vision, the most amazing thing start to flow out it, of what we can do, and we get so inspired by each other. The reality of implementing all of these things is another matter. And we don't have the resources, so we've got a couple of different parts of the organisation, so we've got the building, what's it called, the BERG group, the building environment resource group or something I think it is. And we've got the common house group. Both those groups have got sort of lists of things that need to be done, or want to be done around the place. And we're prioritising them and we trying to merge them, and bring in from the charrettes, what the whole community has already contributed. So you know sort of break into three categories and then start to chip away... (Giselle, 6 years).

Mindful Communication

The details of the My community's communication cards:

Jo ran a workshop on mindful communication for within the community. From that they produced cards on 'My community's communication', which captured the ideas of mindful communication in a community context:

My community's communication... to help communication in the following ways...

- *take responsibility for proactively practising mindful communication,*
- *first assume that others are acting in the best interests of our community as I do,*
- *use I statements,*
- *take responsibility for my feelings and needs,*
- *speak plainly, directly and succinctly so as to be inclusive,*
- *commit to making apologies and accept my and others' mistakes,*
- *discuss difficulties directly with the person involved and respect others by not discussing sensitive issues without their permission*

Appendix I. Extract from an interview

This is an extract of the transcription of the group interview with Murundaka residents on 20/05/2014.

Gisele: And Glen Ochres book is around somewhere around two, and that is proving to be very useful in getting, and starting to get quoted by people and you know... Reminding one another, and teaching one another. Because we can't all read all books. It's very ad hoc the way it is happening. And you know we get a bit busy with things too. Because we are quite active with, you know we are active internally. We have lots, we have birthdays and weddings and weights, and all stuff happening. But we are also quite active with connections with our Immediate neighbourhood (good quote). And beyond you know. We have a lot of visitors staying with us. And a few WWOOFers, and HelpX people.

Heidi: Thanks John

Matt: A couple of examples right here...

Gisele: Contribute, and make a difference. Particularly because we are small, so we do need to be doing that.

Matt: Yeah I am interested in the ways, the different connections with different parts of society, I guess

Heidi: But don't you think, like, I think about this one a lot. The one big aspect of us is the joy of living in an urban community. We haven't tried to give up our other connections, and I think that we have spoken previously about the, you know we were just talking earlier dinner about, you buy into a rural community, it's this coop model, it's a low cost to buy in because the banks don't like the money for that kind of stuff. So it is all managed so that you can do that. And you basically let go of being a part of big cities, of being a part of, you know, these busy lives, these busy... We are also busy. So I have got to go to the city for work, and I go out to St Kilda for this. And I go to the Peninsular on the weekends and, you just had this the expectation of this very spread out and very active life that we just, kind of put living here on top of. That is just what we do at home. And that, you know, I think that is good students strain on both situations. I'm being able to live here productively and happily, and to have a satisfying about of external engagement and continuing that identity. That you don't just become, I don't know, subsumed in just Murundaka... Just Murundaka, (whispers). I don't know, how has it been for you guys? Because, Joe you are leaving at least in the north before, you are living, it wasn't a drastic difference

Jo: Yeah, I just find myself having to be careful to not, because so much does happen here, and it is easy to kind of get, stay here and feel like you know, you're having all your needs met.

Matt: You are having a full and active life

Jo: Yeah, so I just have to be careful to balance it, and make sure that I keep contact with my other networks. It's like an effort now, whereas before it was...

Giselle: Yeah, I have to do that too I have to remember, if a friend asked me out I have had to go... God, I have to do it, I have to go out...

Jo: Out into the city, what!

Heidi: Yeah, it's like, don't you want to come out here?

Jo: ... But there is a working bee on...

Ha ha ha laughing

Heidi: Gisele and I had a thing the other day, that common equity, you know the people manage this place, invited us to come to a meeting in the city at their office in Richmond. And we said, you know what, let's see if they will come out here. We tried, we rang them and just said we really think you should posted at our place. Because it is really late at night, and some of us have young children. And they said like, yeah, lots of people have young children, and they are all coming from all over Melbourne.

Giselle: Some are coming from Geelong... Anyway, it is a bit like that. Sometimes you get out and go wow, it's a few days since I left the ranch

Heidi: Yeah, it is pretty intense, I don't know

Matt: Is that a bad thing? Or a good thing? Or both?

Heidi: It's just a thing...

Giselle: I actually don't think it's that bad. And really, I think also it is something to do with, it is about consumption too because... The consumption model that we have all been indoctrinated with requires us to have such a level of income to sustain it. And that means being out there earning that money, and then that means you're time poor to do all the other things. And you know you can spend decades going I wish I had more time, and I can find you for friends of the Earth, or whatever. And then when you have got community happening and you realise that the really are, we are too few people, too few active adults to really do all the things that we... It's the have to's, and the want

to's, and the want to's take second-place usually, to have to's, you know. So you want more time, so how to liberate my time? Have less work demands. How to have less work demands? Have less consumer demands...

Matt: ... Less expenses...

Giselle: And then so in the end you find that actually your needs are being meant well, see you actually don't need to be consuming so much. And then you can let go of some of the income generation, and then you've got more time, and you can do more in the community, and it is a self-perpetuating thing

Matt: Do you think it helps meet some of those demands, that you feel, by living here?

Giselle: Yeah, because you start to, you start to make things for yourselves. Is that to make bits of furniture, or you start to you know so things, I mean you know, things. That ordinarily, it's the default, would be just go end... It's out there, it's already done

Matt: Buy it, grab it, yeah

Jo: And sharing of those skills, like having conversations about, because we'll have that similar interest, and it's like are you going pick apples from that tree that's on the nature strip down the road... Yeah so just sharing ways to...

Giselle: Actually, we went and harvested a Christmas tree, didn't we?

Jo: Yeah, we did... Ha ha ha

Giselle: From a vacant block

Jo: Yeah, but that saved us a whole day's work

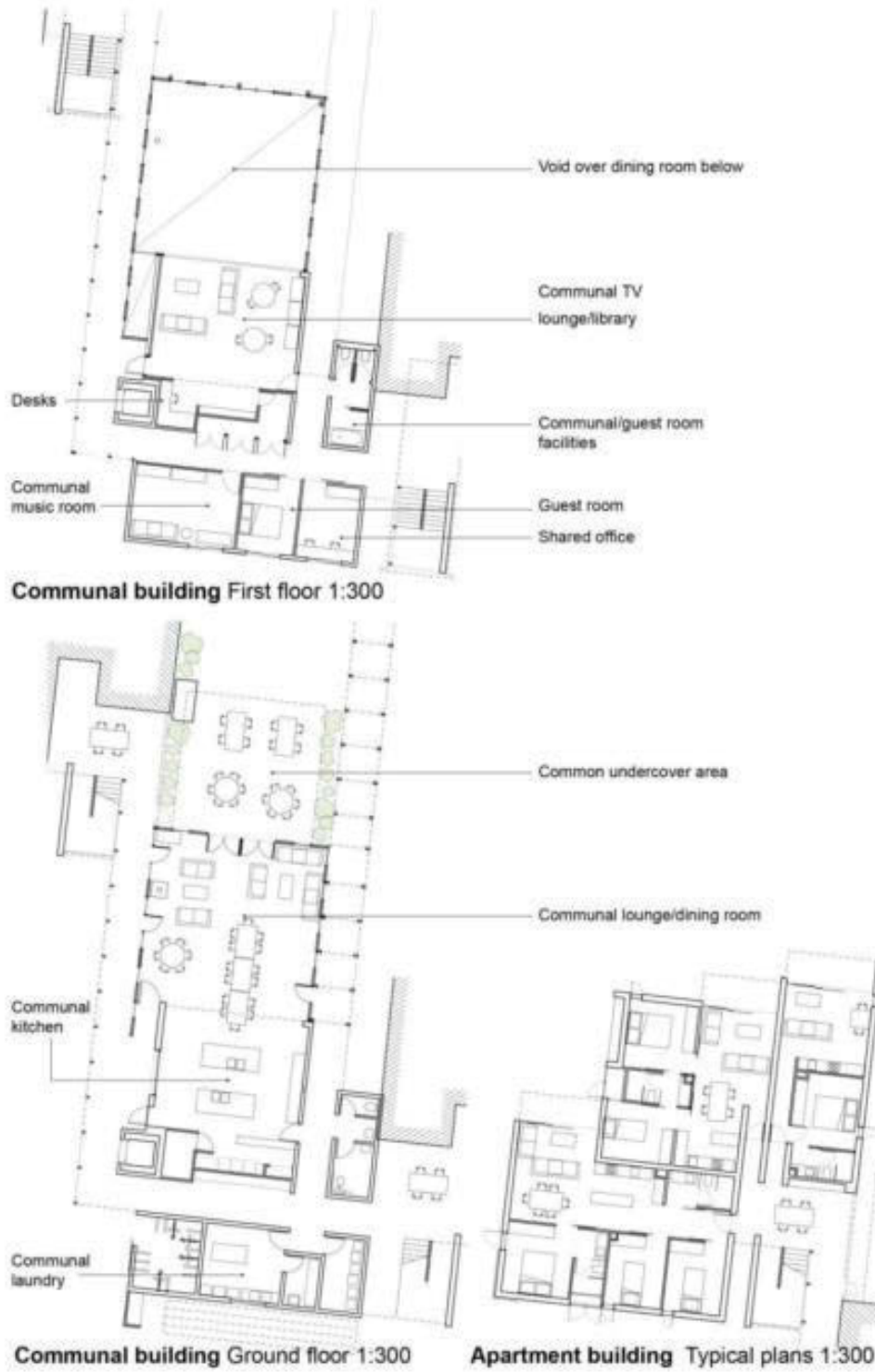


Figure J-2: Typical Murundaka floor plans

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